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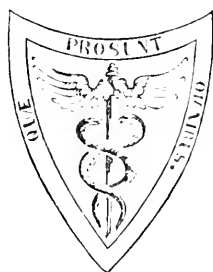
ISAAC HAYS, A.M., M.D.,

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TO READERS AND CORRESPONDENTS.

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Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of February.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *five*) will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

The following works have been received:—

Klinisk Veiledning til Diagnose, Behandling og Forebyggelse af Veneriske Sygdomme. Af Dr. S. ENGELSTED, Overlæge i Kommune Hospitalet og Klinisk Lærer ved Universitetet. Kjøbenhavn: C. A. Reitzels, 1877.

Traitement Rationnel des Plaies; Méthode d'Aération. Rapport de la Commission Spéciale du Traitement des Plaies à la Société de Chirurgie de Moscou, 10 Janvier, 1877. Moscou, 1877.

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Über die Harder'sche Drüse der Säugethiere. Von Dr. EDMUND C. WENDT, aus New York. Strassburg, 1877.

Die Formen des Harnröhrentrippers und die Endoskopischen Befunde derselben. Von Dr. JOS. GRUNFELD in Wien.

Considerazioni Critiche intorno all'Avvelenamento Col Rame ed I Suoi Sali. Scritte in Serrigio del Foro dal Dottor A. FEROCI, Medico Pisano. Pisa, 1877.

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Proceedings of the Medical Society of the County of Kings, Oct., Nov., Dec., 1877.

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Archiv der Heilkunde, September, October, 1877.

Centrablatt für die Medicinische Wissenschaften. Nos. 36-48, 1877.

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Giornale Italiano della Malattie Veneree e della Pelle. Ottobre, 1877.

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The Sanitary Record. July, Aug., Sept., Oct., Nov., Dec., 1877.

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The Obstetrical Journal of Great Britain. July, Aug., Sept., Oct., Nov., Dec., 1877.

The Journal of Anatomy and Physiology. July, October, 1877.

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The Glasgow Medical Journal. July, October, 1877.

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The Indian Medical Gazette. June, July, Aug., Sept., Oct., Nov., 1877.

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The usual American exchanges have been received; their individual acknowledgment is omitted for want of space.

Communications intended for publication, and books for review, should be sent *free of expense*, directed to ISAAC HAYS, M.D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, London, will reach us safely and without delay.

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The advertisement sheet belongs to the business department of the Journal, and all communications for it must be made to the publisher.

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ERRATUM.

In the number for October, 1877—

Page 404, line 6. and page 405, line 16. for "Schultze" read "Schelske."

THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES
FOR JANUARY 1878.

ARTICLE I.

ON MOUNTAIN FEVER AND MALARIOUS WATERS. By CHARLES SMART,
M.B., C.M., Captain and Assistant Surgeon, U. S. Army.

IN the Rocky Mountain region of this country there prevails a fever to which the *vox populi* has attached the name of *mountain fever*. Ignorance of the nature of disease has no doubt fitted this name on many a case to which a little medical knowledge would have applied a more specific title. The writer, for instance, has been called to a case of mountain fever which proved, on examination, to be one of pneumonia. Such mistakes are natural. But, within narrower limits, this looseness of diagnosis is not confined to the non-professional mind. Whether we have an endemic disease in these mountain regions, separate and distinct from the diseased conditions which are recognized by the profession elsewhere, is a question which many a practitioner, who has seen mountain fever, would hesitate before answering. The first object of this paper will be to attempt a settlement of this point.

In the days of the pioneers and prospectors of this western country, mountain fever was more common and deadly than it is now. This is popular testimony, and would weigh but little were it not corroborated by professional observation at later dates. Severe cases of mountain fever were of frequent occurrence among the emigrants who crossed the country on their way to California or the Mormon settlements.¹ And the record of these past attacks appears in practice at the present time. An investigation of previous history, as in life insurance examinations, will often

¹ Dr. Williamson, in the discussion on Mountain Fever. Salt Lake Medical Society, March 12, 1877.

bring forth an account of serious temporary disablement from mountain fever, either on the overland journey or immediately after arrival in the mountain country.¹ In these earlier days the profession treated this fever by mercurialization;² the laity by the "time-honoured sage tea."³ To whom belongs the credit of having first attacked it with quinia fails to appear upon the record.

But, although neither so general nor so dangerous now as when the emigrants plodded westward with their broken-down stock and overladen wagons, it appears in a severe form with sufficient frequency to make it a matter of much interest to the profession, irrespective of the light which its study seems to throw, as will appear hereafter, on questions of larger sanitary import.

The literature of this fever is exceedingly meagre, consisting only of papers by four medical men and scattered remarks by army medical officers.

In 1851 Dr. C. E. Boyle published an article on "Mountain Fever."⁴ In the same year Dr. J. E. Oatman presented the subject under the caption of "Mountain and Malarious Fevers, produced by the same cause."⁵ In 1855 Dr. Ewing wrote on "Mountain Fever" in the *St. Louis Medical and Surgical Journal*;⁶ and, lastly, in 1865, Dr. F. Rice Waggoner, in the July number of the *American Journal of the Medical Sciences*, published an article entitled, "On the Mountain or Continued Miasmatic Fever of Colorado Territory."

Dr. Waggoner was taught by his pioneer brethren that mountain fever was a modification of typhoid or enteric fever, but he shows clearly in his paper that what he looked upon as mountain fever were cases of purely malarial origin—severe remittents, unremitting remittents, so to speak, or, as he calls them, continued miasmatic fevers.

Fort Lyon, Colorado, at which Dr. Waggoner treated his cases, was situated in the valley of the Arkansas River, with thousands of marshy acres around it, with a summer temperature running as high as 105° F., with heavy autumnal rains, and a sick report bristling with intermittent and remittent fevers. Two years after his article was published the post was abandoned on account of its unhealthy location, and a new site having been selected on higher ground, about twenty miles distant from the old one, the garrison was relieved from its liability to this fever.

Dr. Waggoner's paper was written not so much to prove the malarial origin of the mountain fever of Colorado as he observed it, as to insist on

¹ Dr. Benedict, in the aforesaid discussion. Salt Lake City Medical Society, March 12, 1877.

² Dr. Allen Fowler.

³ Dr. Benedict.

⁴ Ohio Medical and Surgical Journal, vol. iii. pp. 528-530; and St. Louis Medical Journal, vol. ix. pp. 454-456.

⁵ North Western Medical and Surgical Journal, vol. viii. pp. 105-108; and Boston Medical and Surgical Journal, vol. xlv. pp. 511-512.

⁶ Vol. xiii. pp. 109-116.

large doses of quinia in its treatment—sixty to seventy-five grains in divided doses during the twenty-four hours. This treatment, however, has been practised by army medical officers in the fever districts of the Gulf coast, the southern States, and western territories since the days of the Florida war.¹

But, if Dr. Waggoner found his cases to be so clearly malarial, those of Dr. J. E. Oatman were apparently met with under different circumstances, if we may judge from the title of his article—"Mountain and Malarious Fevers, produced by the same cause." There must have been some doubt as to the cause to call forth the argument. I regret that I have been unable to lay hands on the articles written by Drs. Oatman, Ewing, and Boyle.

To come to more recent dates, I find in the Report on the Hygiene of the United States Army, published in 1875, that various medical officers take cognizance of mountain fever.

Surgeon E. P. Vollum, U. S. A., my predecessor at this post, Camp Douglas, Utah, reports² that: "About once in ten years an epidemic of *mountain fever* appears to a considerable extent throughout the Rocky Mountain regions including Utah. Its last appearance was in the fall and winter of 1871-72. It is a malarial fever, commencing as an intermittent, passing on to a remittent, then into a typhoid condition. It may often be cut short by prompt large doses of quinia, but after the typhoid symptoms set in it should be regarded as typhoid fever and so treated. The mortality is often high, but reduced in proportion to the attention a patient receives in the early stages."

The register of the undertaker of Salt Lake City, as quoted by Dr. Vollum himself,³ does not bear out his statement as to its occasional epidemic virulence, for the percentage of deaths from fever to deaths from all causes—

for 1871 was 11.33

" 1872 " 10.24

" 1873 " 13.20

" 1874 " 12.46

showing, at least, that if mountain fever visited the city in 1871-72 to a greater extent than in the two following years, it failed to leave its mark on the undertaker's books.

Dr. A. J. Hogg, from Medicine Bow, Wyoming Territory, reports⁴ that: "Occasionally there is a case of a fever vaguely called mountain fever, but which resembles the remittent type more than any other, and is very amenable to treatment."

¹ For many reports on this head see Medical Statistics U. S. Army, 1839-55, pp. 637-690.

² Page 340. Report on Hygiene of the U. S. Army, 1875.

³ Page 341. Ibid.

⁴ Page 361. Ibid.

Assistant Surgeon Patzki, at Fort Steele, Wyoming Territory, reports¹ that—

“A remittent fever, occasionally very severe, is met with, by the mountaineers called mountain fever, and much dreaded by them. The most prominent symptoms are headache, severe aching through the whole body, insomnia, furred tongue, frequent, full pulse, constipation. Chills are infrequent. The efficacy of large doses of quinine proves the malarial origin. The mountaineers treat it with their panacea, sage tea, and, as they assert, quite successfully. Men cutting timber along the streams, mostly Danes and Swedes, suffer most from this fever.”

Surgeon F. L. Town, U. S. A., at Fort Shaw, Montana, states² that :—

“Remittent and typho-malarial, and, probably, enteric fevers, are not infrequent in the spring and fall, especially among miners and hunters, or persons who are generally without shelter; these, in the parlance of the country, are called ‘mountain fevers’ indiscriminately. Three cases of typho-malarial fever have occurred at the post, two of citizens and one a soldier, and with a fatal termination in each instance.”

Lastly, Assistant Surgeon Jaquette, U. S. A., at Fort Boise, Idaho, reports³ “an occasional case of fever, either remittent or intermittent, commonly called in this country mountain or typho-malarial fever.”

Dr. Williamson, of Salt Lake City,⁴ while admitting the resemblance to malarial remittent, and the efficacy of quinia, when administered early in the disease, feels confident, from an extended experience, that if the fever has fairly established itself before the patient is seen, “you will have a case of disease that will run from three to five weeks before you can see the commencement of convalescence.”

Dr. Allen Fowler’s experience⁵ has led him to abandon the name of “mountain fever.” The disease to which he formerly applied that title he now recognizes as malarial remittent fever.

From the above extracts it will be seen that the published testimony indicates the mountain fever of popular parlance as consisting of malarial remittents with a possibility of typho-malarial or typhoid fevers—that is to say, that we have no specific fever indigenous to the Rocky Mountain regions.

But before discussing this conclusion I desire to place on the record the result of my own observations during a service of nearly four years in the Rocky Mountains.

I arrived at the post of Fort Bridger, Wyoming Territory, in August, 1873, and as the summer was far advanced, expected to come into immediate contact with the mountain fever or malarial remittent of which I had heard much and read but little. Yet there seemed nothing malarious in the surroundings of the post. The drainage was good, the valley fall being so marked as to prevent all stagnation of surface or subsoil water; the vegetation scanty, consisting of sage brush and interspersed grass tufts on the

¹ Page 385. Report on Hygiene of U. S. Army, 1875.

² Page 431. Ibid.

³ Page 460. Ibid.

⁴ Discussion on Mountain Fever. Salt Lake City Medical Society, March 12, 1877.

⁵ Ibid.

mesas, and a thin belt of shrubby growth along the creek; while the thermometer fell to 32° F. ten months out of the twelve, and the winds blowing most of the time from the northwest, came from the higher peaks of the Wasatch range.

The autumn and winter came and went without the advent of any fever cases either among the troops or the settlers in the vicinity, and I began to consider mountain fever a myth. But as spring advanced a few anomalous cases presented themselves at surgeon's call. The men complained that they had caught cold, and investigation showed the presence of a slight catarrh or of some equally slight congestion of the fauces; a local affection of too trivial a nature to account for the peculiar coexisting constitutional disturbance. The bowels were constipated, urine scanty, skin dry, complexion sallow, pulse about a hundred, and temperature slightly increased, with loss of appetite and nausea, much languor and depression of spirits, pains in the bones and muscles, and stiffness in the joints. Occasionally instead of constipation there would be a marked looseness of the bowels. Not that there was anything peculiar in the symptoms as above enumerated, they simply indicated the febrile condition; but the languor, the muscular pains and articular stiffness were more prominent in the appearance and complaints of the men than the condition of the pulse would have led one to expect. Some thought they were going to be laid up with rheumatism. Many had been ailing for a week or two before they reported as sick, the first signs of deteriorated condition being loss of appetite, disturbed and dreamful sleep, and morning stiffness in the joints, chiefly the metacarpophalangeal and phalangeal. But if anything could be called characteristic of this condition it was the appearance of the tongue, smooth and coated with a thin film like the faint bluish-white advance of the skin over a healthy ulcer in its progress to cicatrization; this, with or without a yellow fur toward the base. As I had often seen this tongue connected with malarial poisoning (it was pointed out to me by Dr. R. C. Stiles, then Surgeon U. S. Vols.), and as in the more aggravated of these cases remissions and exacerbations of the febrile state were readily discoverable, I treated them from the first with quinia, with or without cathartics according as the film on the tongue was clean or yellow-furred, and returned them to duty in a few days.

I felt satisfied that the febrile action was totally unconnected with the slight local congestion—that the latter was in fact an accidental circumstance engrafted by simple exposure on a depraved constitution, and engrafted the more readily on account of that depraved condition.

The cause of this deterioration in the health of the command was difficult to unearth. The men were cleanly, well fed, well housed and clothed, and had just enough of fatigue duty to keep them in healthy condition. Nor did the sutler's store seem to be implicated in the matter, for men well known to be temperate were affected as frequently as those whose

reputation in this respect was not so satisfactory. The appearance of the tongue, the tendency to remission and the influence of quinia seemed to indicate malarial exhalations as the *materies morbi*, and yet in view of the want of malarious surroundings, in view of the season of the year and the temperature which discountenanced a malarial theory, and especially in view of the fact that certain recruits who had arrived at the post prostrated every week or two with intermittent fever were progressing to perfect freedom from aguish attacks, I could not bring myself to record these cases as malarial remittents, but put them down as catarrhs and quinsies, and awaited developments.

These came in a very short time. Cases appeared of fever without any complication by local lesion, and I recognized that I must be dealing with the incipency of our so-called mountain fever.

At the same time many officers and men in the garrison complained of feeling out of sorts without reporting sick. They had lost appetite, felt stupid and sleepy, had pains in the limbs and stiffness in the joints, and the tongue was covered with the smooth bluish-white film. To these blue pill and quinia, or the latter alone, were given, and no more was heard of them.

The citizens in the neighborhood furnished my first severe case of this fever. A woman residing near the post, who had been in bed for ten days under the sage-tea treatment before I was called, seemed beyond the power of medicine. She was in a typhoid condition, tongue dry and black, great prostration and emaciation, low delirium, frequent stools of bloody mucus, followed in a few hours after I first saw her by a state approaching coma-vigil. Two weeks later she was convalescing after a course of quinia, astringents, brandy and nourishment; but it was long before she recovered her strength.

Next a surveying party in the neighbourhood of Bridger put into the post on account of the sickness of two of its members. One had given up work four or five days, the other two days before their arrival; but both had been feeling out of sorts for a long time before they became really prostrated by their sickness. The latter, the milder or more recent case, presented the symptoms which I have indicated as affecting the enlisted men of the garrison, and like them, under quinia, the patient recovered in a few days: the former differed by having not so much an exaggeration of the febrile state, as in having more languor and depression of spirits, with a tongue in which the film had increased in thickness to form a whitish layer, no yellowish fur being present either at the centre or base. The case ran a typhoid course of four weeks and was similar in its progress to that of the woman already mentioned, but as in her case it was not enteric fever. The exacerbations and remissions were less distinct and more irregular, the temperature was never so high as in typhoid, the diarrhoea was dysenteric in character, and there was no tenderness in the ileo-

cæcal region, while for the amount of febrile action as measured by the pulse and temperature the nervous depression was extreme.

While attending this case I had an opportunity of comparing it with one of pure typhoid occurring in the person of a girl fifteen years old. This case was carefully studied, as it was interesting not only in connection with the mountain fever case, but as bearing upon the origin *de novo* of typhoid fever. At its inception it was viewed as another specimen of the mountain fever, but as it was uninfluenced by quinia, the remedy when pushed producing much gastric disturbance and bilious vomiting, the diagnosis was altered to typhoid, doubtingly, until the eruption established its accuracy. There were an accompanying bronchitis, evening exacerbations, rose-coloured eruption, ileo-cæcal tenderness, and typhoid diarrhoea, all of which were absent in the mountain fever case.

To complete the fever history of that season and fill the niche between the incipient cases in the garrison and the typhoid examples among the citizens, a case occurred in the person of a soldier who was on detail as post-gardener. Soldiers, when indisposed, appear at surgeon's call for excuse from duty when, if in civil life, they would not think of sending for medical advice. Most of the cases in garrison are thus seen at the first manifestations of the disease; but this gardener, being his own master and requiring no excuse from duty, thinking that he would get well in a day or two, failed to report as sick until the fever was well advanced. His tongue on admission into hospital was white-coated like that of the surveyor, but in a week he was convalescing and in two weeks was returned to duty—thus avoiding the slow convalescence consequent on the development of the typhoid stage, yet in his case the tongue became dry and its white coating browned and fissured before the change for the better was inaugurated.

Such having been my experience up to the autumn of 1874, I wrote for the *Report on Hygiene* published in 1875, that at Fort Bridger, “a remittent fever susceptible to the action of quinine is well recognized as being indigenous.”

While at this same post during the spring and early summer of 1875, and again in the corresponding season of 1876, a recurrence of this febrile tendency appeared among the troops; but most of the cases were seen early, and in a few only did typhoid symptoms begin to make their appearance.

This closes my experience at that station.

One point, however, remains to be mentioned. It is that the records of the post, the figures left behind them by my predecessors as embodying their experience of the prevalence of mountain fever, corroborate my own observations, showing the months of May, June, and July to be the months of visitation. Thus, during the eight years previous to my assignment, May gave an average of 5.60 cases per thousand of mean strength, June 13.89, and July 9.47; while no cases were recorded during the

months of September and October. Yet Dr. Drake reports those very months of September and October as the period of maximum prevalence of malarial fevers in the United States.¹

The following table shows the average strength of the command and the prevalence of this fever in cases per thousand of mean strength:—

Month.	Strength.	Cases.
January	172	4.36
February	167	.75
March	168	1.49
April	154	1.62
May	134	5.69
June	135	13.89
July	132	9.47
August	145	4.26
September	131	....
October	156	....
November	171	5.85
December	168	.74
Annual	153	48.03

In July of last year (1876) I reported for duty at Camp Douglas, Salt Lake City, Utah, but saw no febrile cases until quite recently. Two companies of the Fourteenth U. S. Infantry, which had been out with General Crook against the hostile Sioux from November, 1876, until the following January, arrived at the post to take station immediately after the campaign was finished. A day or two after their arrival, the men began to report at surgeon's call in a condition similar to that with which I had become familiar at Fort Bridger. A dozen were furnished with a cathartic, and quinia in five grain doses thrice daily, but were not taken on sick report. Five men and one officer, however, had become so oppressed with the mountain fever poison that they had to be reported sick and retained under treatment from three to nineteen days. And it is interesting to remark, as being the only case out of many, that one man, after having been discharged from hospital as entirely recovered, made his appearance in eight days with a recurrence of the febrile attack;² but it was readily removed by quinia, and no subsequent relapse has taken place. These men had suffered much from exposure while on their campaign—during the latter part of it especially. At and after Christmas, as I am told, the thermometer was more often below zero than above it.

Such has been my experience of the only peculiar febrile condition which I have observed in a four years' service in the Rocky Mountain country, showing itself in:—

¹ Daniel Drake. *The Principal Diseases of the Interior Valley of N. America.* Phila. 1854.

² I have since met with two similar cases of recurrence. Oct. 20, 1877.

1st. A primary stage of one, two, or more weeks, during which the individual is more or less oppressed by the influence of the *materies morbi*.

2d. The development of fever, more or less marked, and more or less rapid in its course, with irregular remissions and much more mental depression and muscular prostration than the patient's pulse and temperature would prepare the observer to find.

3d. A typhoid stage marked by prostration, emaciation, low delirium and coma-vigil.

It is to be observed that I have seen but few cases in the typhoid stage, and few showing the transition to it from the remittent condition, but, nevertheless, I do not hesitate in my opinion that these three conditions are produced by the action of one and the same morbid influence, and that they constitute the infancy, adolescence, and maturity of the mountain fever of the pioneers. And in this opinion I have most important support—for a summary of the above description of mountain fever read before the Salt Lake City Medical Society, March 12, 1877, received the sanction of that body.

Now, the question comes, Is this a fever *sui generis*, or are we to give it recognition as typhoid, typho-malarial, or malarial remittent fever?

And first as to typhoid. As already seen, the preponderance of the published testimony is not in favour of this theory. Yet, beside the generic traits of fever certain points of similarity exist between this disease and enteric fever; for instance, the languor, depression of spirits, and intellectual oppression, the remissions and exacerbations, the typhoid tongue, prostration, and delirium. But closer investigation shows many and marked differences. It runs no definite course; for in one case the patient may have been out of sorts for weeks before the febrile action is developed, while in another the first stage may comprise only a few days. In one the fever may go on from day to day (in the absence of proper treatment) without much apparent change for the worse, while in another a day or two may suffice to manifest the desiccation and darkening of the tongue. This same irregularity applies to the history of the individual case as regards the occurrence of the remissions and exacerbations. The temperature does not run so high as in typhoid. No eruption is presented, no meteorism, no iliac tenderness; and if diarrhœa be present, as it usually is, it is dysenteric in character. Again, easily recognizable cases of typhoid fever are rare in the Rocky Mountains, especially in the remote settlements, while mountain fever is so common, especially in those same settlements, as to be a name in the mouth of the people. At Fort Bridger, for instance, out of a mean strength of 153 men, there were recorded during the eight years, 1866-73, 59 cases of mountain fever expressed as malarial remittent, and but one of enteric fever. Lastly, quinia has no power to check the onward course of typhoid, while its influence over this fever, particularly in its first and second stage, is most marked.

As to the typho-malarial suggestions, if that fever be viewed as a com-

posite, typhoid occurring in a constitution broken down by exposure to malaria, it is excluded by the exclusion of typhoid. If, on the other hand, it be considered as a peculiar manifestation of malarial poisoning, the suggestion remains to be discussed along with the malarial remittent theory of mountain fever.

Fever from malarial poisoning is so many-faced in its appearance that it cannot be excluded so readily as the typhoid by simple observation of the symptoms. In fact, at first sight one is struck by resemblances rather than by differences, as witness the similarity of the first stage to the dumb ague of malarious districts, the remissions of the second stage, and the influence of quinia.

With regard to the effect of quinia, there appears to be a tendency in the profession to bring in malaria guilty if this remedy testifies against it, although the specification may be unsustained by any other witness. It is poor logic when put down in black and white:—

Quinia is a specific in malarial disease.

Quinia is a specific in x .

x is therefore a malarial disease.

But it is a very good working rule, expressing as it does the greater likelihood that the source of the malarial poison has escaped our observation, than that quinia, in view of our long experience of it, should be a specific in other genera of disease. Dr. Patzki, of Fort Steele, illustrates this tendency by saying, as quoted above: "The efficacy of large doses of quinia proves its malarial origin," while he immediately continues:¹—

"That persons afflicted with ague rapidly recover in this climate was illustrated in June and July, 1867, when the troops brought from the swamps of Florida had their systems tainted with this disease. During the two months 96 were rendered unfit for duty out of a mean strength of about 200 men, and many more suffered to a less degree. During the next four months but 17 cases occurred, and none during the winter."

On page 319 of the *Report on Hygiene* I find myself reporting from Fort Bridger that:—

"The intermittents are imported diseases. During my service at this station, I have found no case which originated in the locality. On the contrary, the tendency in the imported cases is to longer intervals and ultimate recovery. Every monthly report which shows an unusual number of cases of this disease shows at the same time some change in the garrison. During succeeding months the number becomes smaller, until a new company or a detachment of recruits brings a fresh influx of intermittent cases. In one notable instance, occurring in June, 1869, when the garrison was relieved by troops from Florida, 40 intermittents were taken on sick report in a strength of 199 men, or 200 per thousand for the month, while the average for the year (computed from the eight years, 1866-73) is only 167 per thousand."

The post surgeon of Fort Shaw, Montana, reports on page 434: "I have known of no cases of intermittent fever that have with certainty originated in the country."

Again, if note be taken of the exposures of the two companies of the

¹ Report on the Hygiene of the U. S. Army, page 385.

Fourteenth Infantry, which furnished me with my recent cases, it will be found that they received the mountain fever poison while the temperature was at times below zero, and always below the freezing point—a fact which certainly does not fall in with our established notions of malarial poisoning.

If then mountain fever is a malarial remittent, as the general testimony seems to determine it, the question arises—How can we have a malarial fever in a region of country where there are seemingly no malarious traits, and where it is noted that sufferers from malarial poisoning rapidly throw off the thrall of the disease?

Do we have other telluric influences—other than the marsh malaria—a mountain miasm for instance, similar to, but differing in its habits from the swamp poison, and producing a disease generically similar to but specifically distinct from our malarial fevers?

Or, can we have malaria, exhaled from the lowland swamps, transported, to Fort Bridger for instance, across vast tracts of interlying country, and this in the face of the steady northwest wind which blows over the post from the higher regions of the mountain range, the said malaria being so modified in its transit as to produce the mountain remittent with its peculiarity of symptoms at seasons which are not the seasons of visitation in recognized malarious districts?

In this connection I desire to refer to certain experiments which seem to throw light on the causation of this fever.

While stationed at Fort Bridger I spent several months in examining the various spring, well, and river waters made use of by the troops in Nebraska, Wyoming, and Utah. The most remarkable point developed by these analyses was the large amount of undecomposed organic matter of vegetable origin which was contained by all the river waters, even those which were looked upon as pure mountain streams. That the organic matter was vegetable in character was inferred from the absence of the sodium chloride which is the invariable accompaniment of animal matter; that it was recent, or at least in good preservation, by the absence of the nitrites which would have resulted from its decomposition.

For the determination of this organic matter Wanklyn and Chapman's process was adopted, as affording more delicate results than the coarse method by ignition, and more trustworthy than the permanganate decolorations. This process depends on the transformation of the nitrogen of the organic matter into ammonia by distillation with permanganate and caustic potash, and the estimation of the resulting ammonia by Nessler's solution. The facts developed have such an important bearing on the question of water-supply that I shall detail the steps of the process, that I may guarantee the results to those who have a practical knowledge of its manipulations.

500 cubic centimetres of the given water were distilled from a large retort, connected with a Liebig's condenser, until 50 c. c. had collected in the receiver. This distillate contained most of the free ammonia of the

water. It was estimated by means of Nessler's solution. 50 c. c. more were then distilled and the ammonia determined as before. If the second measure of 50 c. c. showed the presence of ammonia a third was distilled, and, if necessary, a fourth, until proof was obtained of its complete removal from the water remaining in the retort. Ten grammes of caustic potash and .400 grm. of permanganate were then dropped into the retort—either dry or in solution in distilled water which had been proved to yield no ammonia when distilled with these chemicals—the distillation continued, and the ammonia evolved in the destruction of the organic matter estimated in successive measures of 50 c. c. of the distillate, until no more was found to be given off.

In these determinations the greatest care was taken in conducting the distillation, in watching the coloration produced by the Nessler's solution, and in proving the strength of the standard ammonia solution.

Now, to appreciate the results which were obtained it must be premised that the authorities in sanitary science, who have had most experience of this method of organic determination in water analysis, lay it down as a rule that water containing .10 part per million of ammonia from nitrogenous matter should be regarded with suspicion, while that which contains .15 ought to be condemned as dangerous to health.

The *purest* of the river waters examined were those of Lodge-Pole Creek at Sidney Barracks, Nebraska, Black's Fork at Fort Bridger, Wyoming, and the Douglas Brook at Camp Douglas, Utah—and these gave respectively .19, .20 and .28 part per million of ammonia from the nitrogen of dissolved organic matter.

This was so singular and so unexpected that I proceeded to investigate the matter more closely. At first I inclined to the opinion that the water must collect this large quantity of organic contamination in its course along the valleys. I thought of the immense amount of decaying vegetation in this wild region where no crops are harvested, but where the growth of to-day uprises from the decay of ages. I gave all credit to the effect of beaver dams in stagnating the waters above them, which afterward found their way slowly into the main current and polluted it with the organic debris which they had dissolved during their stagnation. But this theory was scarcely tenable in the face of the fact that streams running in a rocky bed and with but little vegetation near their radicles were found to be nearly as much impregnated as those which had a slower course in the tangled brush-wood of lower-lying valleys. However, I could form no better theory, and as a step in the direction of testing it, I set to work in the first place to prove the purity of the water which fed these streams.

The springs I had already on my record as pure—Camp Douglas Spring, for instance, containing but .10 part per million; there remained therefore as feeders the rain-fall and the melting of the snow.

The first heavy snow-fall of 1875 occurred about this time; I collected it carefully in clean vessels, melted the samples, and on examination was

surprised to find that it contained nearly twice as much organic matter as the average of the river-waters examined. A second fall two days later gave a like result. The subsequent snow storms of that season yielded less of organic impregnation, although in all cases it was in excess of that contained by the waters of the running streams.

At this time I did not connect the vegetable impurity in the snow-water with any practical question, except in so far as to conclude that the organic matter with which we had to do in our western streams must differ in quality from that which British health officers found in *their* water analyses, and that instead of being guided by *their* rules in forming our opinion as to the wholesomeness of a water we must form rules based upon our own experience. And as Black's Fork, Douglas Brook, and Lodge-pole Creek were looked upon as pure mountain streams, although their waters contained up to .28 part per million; and again, as I was informed by the medical officer on duty at Fort Sanders, the water supply of which contained .50 part, that certain low fevers which had prevailed in the neighbourhood were vaguely rumored as being connected with impurity in the water—I felt warranted in summarizing that with us water containing less than .30 might be viewed as wholesome, from .30 to .40 suspicious, and from .40 to .50 dangerous.

I was satisfied with having detected the origin of the organic taint in our so-called pure streams: that it consisted of vegetable emanations and debris swept up by the winds from the face of the continent and precipitated by cold and moisture along with the snow from the higher regions of the atmosphere.

But, that it was productive of injurious effects on the human system, except when existing in unusual and excessive proportion, and that I had seen and treated these injurious effects and speculated on their hidden cause, did not occur to me until the following spring, when I found myself again face to face with the mountain remittent, and saw the stream of Black's Fork, which furnished the water supply of the post, swollen to thrice its usual volume by the melting snows, and charged, as I supposed must be the case, with the larger amount of organic matter—which the predominance of snow-water gave to the stream. Then it was that I referred to my laboratory note-book for various determinations of the organic matter in Black's Fork, which I had made while puzzled as to whence the contamination was derived; and there I found recorded—

Black's Fork water	June 14, 1875,	.28 part.
“	“ July 19, “	.24 “
“	“ Aug. 28, “	.20 “
“	“ Oct. 12, “	.16 “

Another recorded experiment is interesting as showing the organic contamination of this stream when at its purest. It was performed simply to ascertain the organic impurity in the ice-supply of the post, but as this ice

was the solidification of the water during the winter months when free from all contamination by melting snows, the result was now viewed as expressly the minimum impurity of Black's Fork.

Melted ice from ice-house, stored in February, 1875, issued for use and examined August 14, 1875, contained .14 part per million.

The testimony of these figures in favor of a water origin of the fever, showing a maximum and minimum of organic taint corresponding with a maximum and minimum of visitation, was so direct that I felt chagrined at having failed to recognize it sooner—that my search for the origin of the impurity had so preoccupied me as to exclude from the mental field that view of the results of the contamination which now seemed to have lain so plainly exposed.

To complete the series two examinations in 1876 may be given:—

Black's Fork water, April 21, 1876,	.20 part.
" " " May 15, "	.28 "

Rhetorically we make use of snow as a symbol of purity. Dr. Parkes, however, informs us¹ that "there has long been an opinion that snow-water is unwholesome, but this is based on no reliable observations." The above experiments demonstrate cause sufficient to account for its unwholesomeness, and as to the reliability of the observations, I can only say that they were carefully performed, and that the experience gained in conducting over fifty distillations for organic matter in potable waters, superintended their performance.

Besides the Fort Bridger experiments already referred to, and some half dozen examinations which were not recorded, as giving at the time no new light on the subject, but simply corroborating the accuracy of those first made, I have conducted a series of examinations during the past autumn and winter at Camp Douglas, Utah. They are given below:—

	Free Ammonia.	Organic Ammonia.
1. Snow; large, heavy flakes, November 15, 1875 .	.30	.50
2. Snow; large, heavy flakes, November 17, 1875 .	.30	.50
3. Snow; large, heavy flakes, March 21, 1876 .	.10	.60
4. Snow; small, granulated, October 30, 1876 .	.32	.20
5. Snow; small, granulated, October 30, 1876 .	.32	.22
6. Snow; flakes, December, 22, 1876 . . .	.02	.40
7. Snow; flakes, January 29, 1877 . . .	.04	.46
8. Snow; small flakes, February 3, 1877 . . .	.18	.34
9. Snow; large, heavy flakes, March 6, 1877 . . .	.30	.58
10. Snow; fine, granulated, March 8, 1877 . . .	.30	.22
11. Sleet; March 31, 1877 . . . . .	.28	.28
12. Rain; October 17, 1876 . . . . .	.20	.16
13. Rain; March 29, 1877 . . . . .	.28	.18
14. Rain and sleet; April 2, 1877 . . . . .	.28	.22

¹ Manual of Practical Hygiene. London, 1866, p. 9.

These determinations of the organic matter in snow-water, when taken in connection with determinations by the same process of organic matter in the water of our running streams, amount almost to a demonstration of the origin of the latter. It will be seen that the snow-water contains from .20 to .60 part per million of ammonia from nitrogenous impurity, but the average snow-fall of the year has an impurity approaching more to the higher than the lower figure, since the great mass of the snow which falls on this mountain country, and lies until melted by the warmth of the succeeding spring and summer, contains from .50 to .60 part per million. These are the heavy snow-falls, consisting of large, moist flakes which, continuing for two or three days at a time, pile up so many feet of snow all over the face of the country. The snows which are, comparatively speaking, slightly impregnated with organic matter, are the light granulations which fall in but insignificant showers, and the drifting storms of small, dry crystals, which seldom add more than an inch or two to the winter's covering. Estimating by experience the relation between the heavy snow-falls, with their large proportion of organic matter, and the lighter falls containing a smaller proportion, I feel confident that I am not exceeding the truth in placing the average contamination of snow-water at .45 part per million.

Assuming this figure to be correct, and estimating the organic matter of our streams when purest at .14, the occurrence in Black's Fork during the months of April, May, June, July, and August of .20, .28, .28, .24, .20 seems to be accounted for; the conclusion arrived at being that the impurity of our river water is derived from the atmosphere chiefly through the winter snows. Rain-water is purer in this respect. The degree of cold, no doubt, accounts in a measure for the greater precipitation of organic matter with the snow-flake, but the feathery structure of its crystals, presenting a larger surface for the condensation and entanglement of all floating particles, makes the heavy snow-storm a more efficient purifier of the atmosphere than the rain shower, by sweeping to the earth more of the vegetable debris which may have accumulated in the upper strata of the air.

Of this vegetable debris what is so likely a constituent as the cause of the malaria which emanates from such vast districts of country? Here the question is begged, but under the circumstances is this too much to require? A non-malarious country is affected at a certain season with a malarious disease; this season corresponds with the contamination of the drinking-water by vegetable matter brought from distant regions. Swamp malaria is known to be transported by winds. It is known to rise mist-like and be wafted mountainwards from the valleys in which it is exhaled. And if more ponderable matter of vegetable origin be carried into the higher strata of the atmosphere to be subsequently swept down by the snow-fall, why may not malaria accompany?

Many experiments are recorded to prove the germ theory of disease—that the air around us is charged with invisible molecules potent for evil, and, to my mind, every operation performed after the antiseptic teachings of Mr. Lister is a proof of the existence of such germs. Were these germs continually accumulating without provision for their removal, wherein would consist the value of ventilation? But nature's processes preserve the air we breathe in comparatively pure condition. The snow and rain-fall clear the atmosphere of such contaminations. What becomes of the exhaled malaria if it be not swept down in like manner?

Surgeon John S. Billings, U. S. A., in a recent lecture before the medical profession of Baltimore, Md., informs us¹ that—

“The second object in hospital management is the removal of all dust which has settled or lodged, and that this shall be a real removal, and not a mere scattering of it from one place to allow it to settle elsewhere. If, for instance, dust is removed with a damp cloth, this damp cloth becomes a dangerous thing in itself. If the external air be cold we may have a precipitation of moisture on the glass of the windows, and in this moisture will be a considerable proportion of organic matter, so much that if it be collected the fluid will give decided signs of putrefaction. Now this precipitation of moisture and organic matter is temporarily a purifying process.”

Yes. And nature's grand precipitation of moisture and organic matter in the form of our winter snow-falls, is also a purifying process, enabling ourselves, in our small way, to purify the atmosphere of our wards by admitting the air which *she* has purified to drive out and dilute that which we have not as yet found means of purifying after *her* fashion by precipitation.

This on the supposition that malaria is an entity separate and distinct from the organic matter which can be chemically recognized, but who shall say that it is so, or that it resides in such and such impalpable particles of the organic matter and not in others? My own opinion is that malaria in the upper regions of the air bears the same relation to the organic matter existing there, and correspondingly when both are precipitated into our water supply, that organic matter in the wards of a hospital bears to the carbonic acid accumulated with it. Carbonic acid, when in large excess, is pernicious from its own peculiar properties, so, no doubt, with the vegetable impurity of the water; but under the ordinary circumstances of our present ventilation system, carbonic acid is insignificant in itself, and becomes of consideration only as a measurer of the otherwise unmeasurable organic matter of our wards. If we have a ward or sleeping room which gives a large proportion of carbonic acid, we infer a correspondingly large proportion of deleterious animal exhalations, and ventilate accordingly. So it may be conceived that a large proportion of vegetable snow-derived organic matter in our potable waters is of consideration mainly as a measurer of the otherwise unmeasurable malaria which it contains.

¹ On the Plans for the Johns Hopkins Hospital at Baltimore. New York Medical Record, March 3, 1877.

This malaria, evolved from the swamps and jungles during the heats of summer and early autumn, is swept off by winds, and would accumulate to a pest cloud enveloping the earth but for the autumnal rains and winter snows which bear it back to the surface of the soil, and bury it ultimately in the ocean; the rivers thus becoming Nature's drains to carry off the sewage of the atmosphere.

Autumnal rains are here mentioned as purifiers, for, although rain-water is purer in respect of recognizable organic matter than that derived from the snow, it by no means follows that it is less charged with disease germs—less charged with malaria from the atmosphere. The test for the presence of malaria in the rain showers falling upon our mountains must be the coexistence of a rain-caused rise in the streams, with an increase of such cases as we have already referred to malaria in the snow. The cases which occur at Fort Bridger in November (see above) show the morbid agent which causes the remittent to have been at work; and it is just at this time that the stream is carrying off the autumn rains which fall upon the mountains. Toward the end of September rain storms begin, and although the fall at Fort Bridger is small, it must be remembered that it is not the fall at the post, but the much greater fall along the mountain ridge which has to be considered.

We may not suppose that all snow is thus charged with malaria and other deleterious matter of vegetable origin. The evaporation from the ocean precipitated as snow upon some island or sea coast surface may be perfectly pure so far as organic impregnation is concerned. The snow which falls on the Polar Seas is presumably free from disease germs. Whaling vessels cruising in these seas are in the habit of renewing their supply of fresh water about the beginning of July from fresh water ponds or lakelets, formed on the ice floes by the melting of the snows of the previous winter under the steady rays of the long summer sun. This water is used as fresh water for all purposes on board until the return home, two or three months later; and no suspicion has ever attached to it. Large fleets sail from North Britain yearly on these whaling expeditions, and as the vessels are strongly manned—fifty to eighty of a crew—the case seems clear in favour of the purity of this water. But, however this may be, certain it is that the snow-fall on the backbone of the American Continent is impregnated with deleterious vegetable matters.

In discussing questions of malarial poisoning the profession generally holds in view a pernicious exhalation pervading the air, and affecting the system through cutaneous and pulmonary absorption. Yet by many authorities the possible entry of the poison through the medium of drinking water is adverted to. Thus, Professor Maclean informs¹ us that: "It is a common belief in India that water is capable of absorbing malaria,

¹ Reynold's System of Medicine, vol. i. p. 59.

and that periodic fevers, dysentery, and even cholera, are produced by drinking water so charged." Dr. E. A. Parkes refers to the point at greater length. "In modern times," he says,¹ "the opinion of Lancisi, that the air of marshes is the sole cause of intermittents, has been so generally adopted, that the possibility of the introduction of the cause by means of water as well as air was overlooked. Still it has been a very general belief among the inhabitants of marshy countries, that the water could produce fever." And he then quotes several instances in which paludal fevers were attributed to malarious waters.

Now, although, according to such teachers as make reference to the topic, rapidity of development and fatality of issue are acknowledged characteristics of malarial disease when introduced by water, it must not be forgotten that these impressions are derived from experiences in "notoriously unhealthy" districts, where the water, we may suppose from its malarious surroundings, is strongly charged with the poison. What might be the effect of the continued ingestion of a weakly tainted water does not appear unless the cases above described as mountain fever are allowed to be malarial disease from water impregnation.

Exposure to aeriform malaria produces effects proportioned to the dilution or concentration of the toxic principle. Hence we may expect analogous results from the watery solution. Diluted exhalations yield us dumb agues and mild intermittents, while the concentrated poison of the Indian jungle prostrates the system with a malignant remittent. So the weak solution may be credited with the disordered condition which has been indicated as the first stage of mountain fever; a continuance of ingestion, or an increase of poisonous qualities may develop the other stages; while the strongly charged water of an unhealthy district may at once strike the patient down with a pernicious fever.

In view, then, of the above-recorded experiments on snow and river water, and of the ideas connected therewith, may we not feel warranted in claiming that mountain fever is not dependent upon any peculiar mountain miasm, but is a malarial remittent with adynamic tendencies—and that some plausibility attaches to the theory of its origin in malaria introduced into the water supply by the winter snow-falls? This theory explains such differences in the natural history of the mountain fever poison as would lead one, at first sight, to imagine a peculiar influence with characters specifically distinct from those of malaria; the latter lying low in swampy valleys, amid a luxuriant vegetation, most pernicious in hot climates, and in seasons of the year which correspond with the drying up of the annual floods, and producing in the diluted exhalations of more temperate climes a form of fever intermittent in tendencies; the former prevailing in upland regions, amid a meagre vegetation, and in a climate which from altitude assimilates to the Arctic—its prevalence corresponding not

¹ Manual of Practical Hygiene, p. 55.

with the drying up of the floods, but with their rise and progress, and producing in the system a remittent instead of the intermittent febrile form.

This theory is based upon the following considerations:—

1st. The malarial character of the disease as testified to by the majority of observers, by the influence of quinia, and by the differences in history, symptoms, and habitat between it and enteric fever.

2d. The absence of indigenous malaria in the mountain country, as shown by the reports of certain medical officers who have adverted to this point; although the presence of intermittents would be no argument against the theory, but would rather point to the existence of local sources of exhalation.

3d. The presence of vegetable organic matter, and the probable presence of malaria in all the rain and snow showers, but especially in the heavy large-flaked falls which constitute the mass of the winter's snow. The *probable presence* of malaria in the snow appears to be a weak link in the chain of argument, but it must not be forgotten in estimating its weakness that the *probable presence* is all that can be allowed in marsh air, the *actual presence* being insusceptible of demonstration.

4th. The presence of the same vegetable contamination in the water of the running streams as proved by experiment.

5th. The correspondence in time between the melting of the snow and the endemic occurrence of the mountain remittent—May, June, and July being, as already stated, the months of visitation at Fort Bridger. Now as this post is 7000 feet above the sea level, and, moreover, situated on the northern slope of the mountains, its springs are late. The thaw does not begin until toward the end of April, and the waters of the creek continue turbid and laden with the organic impregnation of the snow until July. Trout fishing, in fact, begins about the middle of that month, and no sport of this character can be entered upon until the waters have fallen and become perfectly free from turbidity.

6th. The correspondence in time between the autumnal rain-caused rise in the stream, and the increased prevalence of the fever as shown by the Fort Bridger record for November.

7th. The correspondence in time between the freedom of the face of the country from snow—a few white patches only being visible on the highest peaks of the range—and the exemption of the post from febrile attacks. For the records show no case of mountain fever during the months of September and October, and these are the months when the stream is at its lowest and purest, so far as it is a question of organic contamination.

8th. The sporadic appearance of mountain fever during seasons when the evolution of malaria from mountain marshes and river valleys is rendered unlikely by the low temperature, as in the cases of hunters, miners, and cattle herders, and, on a larger scale, in the cases above mentioned as having occurred in the Fourteenth Infantry—corresponding with snow-

water drinking in every case investigated. The Fourteenth Infantry during the early portion of their campaign were several times obliged to camp near bad water—melted snow collected in natural tanks—and during the latter part the water supply for all culinary and camp uses had frequently to be derived from the snow covering of the earth. Here the increased prevalence of mountain fever at Fort Bridger during the month of January may be referred to, and attributed to accidental circumstances of a character similar to that which gave Camp Douglas a series of cases in January, 1877.

9th. The fact that mountain fever is not so prevalent now, nor so fatal as in the so-called "early days," corresponding with improvement in the mode of trans-continental travel to the settlements, and improved water supply at them. One cause of the lessened fatality is, of course, to be found in the extended recognition of the power of quinia over the progress of the disease, but the diminished prevalence must be referred to the water supply. The emigrant is now whisked by rail in a few days from the Atlantic coast to the Rocky Mountains, and we never find that his arrival is signalized by prostration from the mountain fever.¹ In earlier times, however, when the trip implied months of weary marching, and a water supply contaminated by melting snow, the disease was, as recorded at the beginning of this paper, both common and deadly. So, in the settlements, well-digging, by furnishing a purer supply than the running stream, the beaver dam, or stagnant pond, has been followed by diminished prevalence.

In this connection I cannot refrain from quoting a suggestion by the late Professor Parkes :—²

"Is it not possible," he says, "that the great decline of agues in England is partly due to a purer drinking water being now used? Formerly, there can be little doubt, when there was no organized supply, and much fewer wells existed, the people must have taken their supply from surface collections and ditches, as they do now, or did till lately, at Sheerness."

10th. The appearance of the fever in all its original characters among hunters, miners, prospectors, surveyors, herders, soldiers, or scouting expeditions, and all parties who are thrown for their water-supply on the streams, ponds, pools, dams, and natural tanks which were the sources of supply in the days of the pioneer emigrants.

11th. The appearance of the disease modified by medical supervision at such posts as Fort Bridger, where the water supply is drawn from the running stream.

12th. The rarity of its appearance at such posts as Camp Douglas, where the water is kept comparatively free from malarial contamination. At this post—

"The water is taken from Red Butte Creek, a stream that flows through the reservation from Red Butte Cañon, which is a cut in the mountains, situated to

¹ Dr. Benedict, Salt Lake City.

² Manual of Practical Hygiene. Note on p. 56.

the east of the post. About one-third of a mile up the stream the water is turned from its natural channel by a dam 100 feet long and 6 feet high, substantially constructed of stone, timber, and earth, and provided with waste-way and overflow. From the raised pond formed by the dam an open acequia, about 850 feet long, conveys the water to a reservoir of the capacity of 700,000 gallons, which is located on a natural slope above the post and a thousand feet distant from the line of officers' quarters. The reservoir is formed by excavating the side of the foot-hill of the mountains, and the earth removed therefrom, being placed along the lower side and ends, makes a firm embankment 30 feet wide at the bottom, 6 feet wide at the top, and 8½ feet high. The depth of the water in the basin will average 6½ feet. A waste-way and flush-gate constructed of wood are provided, so that the contents of the basin can be run out in a few minutes when desired. The level of the water in the basin is high enough to give a head of 20 feet at the officers' quarters."

This water is distributed by five inch mains, four inch laterals, and three-quarter inch service pipes.

"During the months of February, March, and April the water in the creek is usually very muddy. When that is the case it is desirable that very little water be allowed to run into the reservoir, as the sediment that will accumulate from a large stream will very soon fill the basin. When there is danger of the supply in the reservoir falling short, and water *must* be let in, it will be well for the man in charge to observe the character of the water, and select days for refilling when the stream is less turbid than usual. In the early morning the water will be found more free from earthy impurities than in the afternoon."

The quotations are from the report of Captain Geo. W. Davis, Fourteenth Infantry, who superintended the construction of the post. His suggestions are born of a thorough knowledge of his subject. Yet, had his object been the preservation of the water supply, not simply from suspended matters, but from malarial contamination, he could not have laid down better rules for the guidance of "the man in charge." The result of this is that the reservoir water is always freer from organic impregnation than that of the creek. A comparison, made March 26, 1877, when the stream was by no means turbid, showed the running water to contain .22, while the post supply gave only .16 part per million.

The freedom of the post from malarial remittents can thus be placed in juxtaposition with an improved water supply; it is to be regretted, however, that the health of the garrison anterior to the construction of the reservoir cannot be brought into the question under discussion. Surgeon E. P. Vollum, U. S. A., reports, as above quoted, that the last epidemic of mountain fever occurred in 1871-72. His official records for those years show many quotidian and tertian intermittents, which may, however, have been imported, and 16 cases of typhoid fever, 6 of which proved fatal, but no cases of remittent fever. The typhoid cases may, therefore, be regarded as examples of the mountain fever which begins "as an intermittent, passing on to a remittent, then into a typhoid condition." He records also a large amount of sickness, "chiefly of a febrile and catarrhal character," among the families in garrison, but, as he attributed it, to rotting wood, dampness, and want of ventilation and sunshine about the foundations of the quarters, and as these quarters were abandoned in favour

of substantial stone buildings at the time of the construction of the reservoir, the case must be set aside as too complicated for admission into this argument.

Having thus identified mountain fever as a malarial remittent, and referred it for causation and explanation of its peculiarities to the ingestion of malarious water rather than to exposure to malarial exhalations, there opens for our consideration a larger view than is seen on the slopes of the Rocky Mountains. The necessity for a modification of our accepted theory of malarial disease is apparent. Lancisi's doctrines are too exclusive. Water must be recognized as claiming a higher place in the disease-producing category; and the importance of this recognition cannot be overestimated.

Leaving to my professional brethren in civil life the investigation of malarial forms as caused solely by exhalation, that is, coincident with a pure water supply, or as the result of malarious water with, or, if possible, without the concurrence of aeriform malaria,¹ the position shall be further considered in this paper from a military point of view, as bearing on the origin of the fevers which prevail in camps.

Surgeon J. J. Woodward, U. S. A., in his chapter on camp fevers,² enumerates as the prevailing fevers of our army, typhoid, malarial remittent, and typho-malarial, inversely in their order of frequency.

As the majority of the surgeons on duty with our army during the war were drawn from practice in civil life, and were familiar alike with typhoid fever and malarial remittents, it is presumable that enteric fever and remittents from malarious exhalations were readily recognized; but, according to Dr. Woodward,³ in the fall and early winter of 1861, reports began to come in to the Surgeon-General's office from various quarters that a new form of fever was prevailing in our camps. Official attention was first directed to the fact as occurring in the army of the Potomac. A board, consisting of Surgeon A. N. McLaren, U. S. A., Surgeon G. H. Lyman, U. S. Vols., and Assistant Surgeon M. J. Asch, U. S. A., was convened to investigate this fever, and determine "whether it is to be considered an intermittent or bilious remittent fever in its inception, assuming in its course a typhoid tendency or a typhoid fever primarily"—the very point at issue with regard to our Rocky Mountain fever. The result is interest-

¹ When we find Dr. Jerome Cochran of Alabama, as quoted by Dr. Woodward in his Remarks on Typho-malarial Fever before the International Medical Congress, 1876, denying the existence of abdominal typhus in Mobile, and ascribing the various adynamic fevers which there occur solely to malarial influence, there would seem to be matter for investigation in the so-called "typhoid" fevers of malarious districts.

² Camp Diseases of the U. S. Army, Phila. 1863.

³ Typho-malarial fever: Is it a special type of fever? Being remarks introductory to the discussion of the question in the Section of Medicine. International Medical Congress, Phila. 1876.

ing. The board investigated cases in many division hospitals and collected a great deal of valuable information in writing by means of questions addressed to the brigade and regimental medical officers of parts of the army, which its members were unable conveniently to visit. The general tenor of the replies confirmed the opinion formed by the members of the board on the basis of their own personal observation. This opinion was that, while a certain number of cases of ordinary typhoid fever existed in the army, the large majority of the febrile cases were "bilious remittent fevers, which, not having been controlled in the primary stage, have assumed that adynamic type which is present in enteric fever."

Uninfluenced by this decision, Dr. Woodward, from whose interesting pamphlet this account is abridged, formed the opinion that the prevailing fevers of the army of the Potomac were hybrid forms, resulting from the combined influence of malarial poisoning and of the causes of typhoid fever. He believed that individual cases received their character in accordance as the one or the other of these influences preponderated in the individual. Full of these opinions he suggested as a designation for the complex condition in question the name of "typho-malarial fever," and succeeded in having this term added to the list of diseases printed on the blank form for the monthly sick report. He has often regretted that he did not also urge the preparation of a circular letter explaining why this term had been adopted, and calling for special reports with regard to the cases which it was intended to designate. As it was, however, he goes on to say, "The term went upon the sick report without any explanation, or a word of comment. But, even under these circumstances, 23,346 cases were reported as typho-malarial fever during the following year, showing how widely the opinions I (he) had formed were shared by the medical officers of the army."

It is indeed a matter of regret that Dr. Woodward failed to prepare a circular explanatory of the term, as this neglect, as will be seen directly, affords room for questioning his estimate of the result of its unexplained appearance on the report.

Medical history shows clearly that the Hungarian fever was spotted typhus modified by malarial complications. The propagation of pure typhus in non-malarious districts by sufferers from the army fever leaves no room for doubt on this point. And, if typhus with malaria gives the army surgeon a hybrid to treat in countries where typhus prevails, it is ground for admitting that typhoid may also furnish a hybrid where it is the prevalent fever. But to attribute all adynamic forms of fever occurring in camps to the modified action of the *materies morbi* of typhus or typhoid fever seems to be taking a step beyond the authorization of facts.

The Gottingen epidemic began as a remittent, and, after the fever was fairly under way, presented many of the symptoms of ordinary typhoid; in its treatment extract of Peruvian bark often proved highly efficacious.

This, in brief, is the definition usually given in our Rocky Mountain fever. But in the one as in the other there is no evidence of the presence of enteric fever. It may have been present in Gottingen, very probably it was present, but:—"Dysenteric sloughs frequently existed in the colon. Nowhere, however, do I find any description of the bulky tumefaction, ulceration and sloughing of the glands of Peyer which is characteristic of typhoid fever."¹ The dysentery which existed in connection with this Gottingen epidemic bears strongly on the relative causation of this fever and that which I have described as mountain fever.

The Walcheren epidemic began also as a remittent, speedily, however, running into a continued fever of typhoid type with muttering delirium, small rapid pulse, dry black tongue, sordes-covered teeth, fetid odour, and black discharges from the bowels. Here also, at the autopsies the characteristics of dysentery were frequently found in the colon; although occasional lesions of the small intestines would seem to indicate in certain cases the presence of the enteric fever poison.

In our own war we undoubtedly met with uncomplicated typhoid cases, with typhoid poison in malarious subjects—Dr. Woodward's hybrid—and with recognizable remittents; but were there no others? My own experience leads me to affirm their existence; a period of broken health during which the soldier laboured to throw off his bad feelings and stick to duty, followed by a remittent fever becoming adynamic in its course, with dysentery tending to hasten a fatal issue.

I was on duty in the field to the end of the war, and saw many such cases in their inception, few comparatively at their termination, as field division hospitals were usually kept in light marching condition. De l'ôit hospitals in the rear afforded better opportunities for studying the convalescence and autopsical appearances. Yet, there were times, as during winter quarters, when field hospitals were permitted to retain and treat such sick of their commands as were within the limit of their capacity. Thus an occasional autopsy would take place, showing such strongly marked dysenteric lesions as to give my mind a tendency to accept the theory of the malarial origin of the case under examination rather than that of its typhoid genesis.

But, in a question of such vast extent as the nature of camp fever, the experience of one becomes swamped in that of the many.

The experience of the many during our late war, as referred to in Dr. Woodward's valuable paper, is comprised in the report of the Board to the effect that the fever was essentially a malarial remittent, and in the popularity of the name "typho-malarial" which Dr. Woodward regards as an endorsement of his own views. With regard to the former I have nothing to say, but the latter requires a word of criticism.

¹ Dr. Woodward, op. cit.

It must be remembered that the word *typhoid* has become a hack in medical literature, expressing on the one hand the special fever of that name, otherwise known as abdominal typhus or enteric fever, and on the other any low or adynamic condition of system occurring in the progress of a disease unconnected with the poison or germs which produce enteric fever. Under ordinary circumstances the meaning of the word can be arrived at from the context, but when we come to the formation of compound words into which the ambiguous *typhoid* enters, its signification may not be so clear. What is its value in *typho-malarial*? Dr. Woodward has no doubt on the point, because he knows the mental value he stamped on the word when coined; but others are at liberty to give it a different valuation; and in fact its originator seems to acknowledge this in regretting that he did not have a circular issued explaining why the term had been adopted.

I am not prepared to say what amount of endorsement Dr. Woodward can draw from the popularity of the term, but this I know that in my service as medical inspector of the Second Army Corps, I have often stood by the bed of a fever case and spoken of it to the surgeon in charge as typho-malarial fever when the symptoms pointed to a low form of malarial remittent; while when enteric poison was manifest, either in the history of the case, or by the presence of the eruption, typhoid stools or iliac tenderness, all ambiguity was thrown aside and the patient spoken of as affected with typhoid. Malarial complication *might* be present, but it was recognized as a complication, the typhoid element being considered as the disease *par excellence*, the disease which caused death; just as after a battle a gunshot wound of the chest would be regarded as the *primum mobile* of death, although the injured man might be suffering from the effects of malarial poison, and those effects might have contributed in no small degree to the fatal issue by impairing the powers of the constitution.

Nor can it be supposed that I was the only medical officer who made use of the term "typho-malarial" for the adynamic cases which did not present one or other of the accredited symptoms of abdominal typhus. Had Dr. Woodward, instead of the item "*typho-malarial*," placed two terms on the report, one "*adynamic remittent*" for the malarial cases, and the other "*entero-miasmatic*," as suggested by Dr. Geo. B. Wood, for the hybrid form, it is doubtful if the army would have furnished as many cases of the latter as it did of typho-malarial fever. In fact I can only see in the large number of cases thus reported the eagerness with which army medical officers avoided a commitment to the theory of a typhoid fever in a malarious constitution or a malarial fever assuming an adynamic type; while at the same time, on account of the ambiguity of the term, theorists on both sides of the question recorded their cases as typho-malarial, and not those alone who concurred with Dr. Woodward in his pathology of typho-malarial disease.

I am strong in my adherence to the opinion of the Board that the army fevers were remittents -- which not having been controlled in their primary stage have assumed that adynamic type which is present in enteric fever,"— and my study of mountain fever has tended to confirm me in this belief.

Any one who has seen both diseases cannot but be struck by the resemblance between mountain fever and the camp fevers of our civil war. Some medical officers indeed speak of the mountain remittent as typho-malarial fever, the same term by which, no doubt, they recorded fever cases among the troops from 1861 to 1865. Now, in the history of the miners, prospectors, surveyors, old time emigrants and recent scouting expeditions, antecedent to their prostration by mountain fever, what have we in common with the troops who were the subjects of camp fever during our great war? Exposures to climatic influences, over-fatigue, want of sleep, anxieties, insufficient and badly cooked food, and impure water. Again, what have we in common between the same troops and the garrison of Fort Bridger previous to the appearance of its epidemic? No exposures, no fatigues, no want of food—nothing but the impure water. Of course on account of the vast concourse of men collected in our war-camps, typhoid fever prevailed and spread from case to case, complicated in a majority of instances by the febrile action induced by exposure to malarial exhalations and probably by the ingestion of malaria in their water supply. But in the mountain fever we have assuredly no specific typhoid or enteric element; we have simply a malarial remittent which if uncontrolled in its earlier stages assumes the adynamic type which is present in enteric fever.

If then in mountain fever we have an adynamic remittent uncomplicated with the specific poison of typhoid fever, if also this mountain fever be considered traced to its origin in the vegetable contamination of the drinking water, and if we are at liberty to assume that a certain proportion of our camp fevers were typho-malarial only in the sense of the supervention of adynamia, it is pertinent to ask may not this certain proportion of our camp fevers originate in a contamination of the water supply by malaria, since impurity of water is the only circumstance common to the previous history of the subjects of both fevers?

Dr. Woodward, in insisting on the enteric element in all camp fevers, divides them into two great classes, both comprehended under the title typho-malarial.

1st. Those in which the malarial element predominates over the typhoid; and

2d. Those in which the typhoid element is most prominent.

But in view of what has been written above concerning the absence of the enteric element or specific poison of abdominal typhus in the cases which have been referred to the action of malarious waters, it is suggested

that they are included in, and probably constitute the bulk of, Dr. Woodward's first class. While as to his second, the typhoid (specific) element being prominent, and the disease therefore easily recognized as a well-known specific fever, although occurring in a system more or less poisoned with malaria, there seems as little necessity for a special term to indicate its existence thus complicated, as for the adoption of *scarlatino-malarial*, or *variolo-malarial*, for an outbreak of scarlet fever, or varioloid among the ague-smitten children of a malarious district. Or, granting the necessity for a composite term, why include the other factor which so often complicated these typhoid cases. If specific typhoid occurring in a malarious system requires the adoption of typho-malarial, typho-malarial fever in a scorbutic is equally entitled to recognition.

Our camp fever would, therefore be classified as follows:—

- 1st. Malarial fever; the result of cutaneous and pulmonary absorption of malarial exhalations.
- 2d. Aqua-malarial fever; the adynamic remittents caused by the ingestion of malarious waters.
- 3d. Typhoid fever; originating in the specific causes of abdominal typhus, and occurring either uncomplicated or complicated in its symptoms and progress by exposure of the subject to malarial exhalations, or deterioration of his constitution by the use of malarious waters.

This is simply a suggestion, but it is pregnant with important results in army sanitation and in the preventive medicine of civil life. It may be impossible to guard the system against malaria (aciform) either in civil settlements or among troops in the field. A pure water supply, however, is certainly within reach of the former; while a recognition of the possibility of a proportion of our camp fevers finding origin in malarious water would be a step towards preventing their occurrence. The conditions of field service, it must be admitted, imply many difficulties in the way of a pure water supply. There is no time to search for it. That which lies nearest to the camp must be used, and if it responds satisfactorily to the rough tests of the senses, it is used without suspicion. But if we clearly realize the dangers which may lurk in such water, we are forearmed. The reactions of malarious water will be investigated, and the study will evolve processes for the destruction of its contained morbid agent; so that, in progress of time we may be able to say of the *aqua-malarial* section of our camp fevers what we now say of our *aqua-malarial* mountain remittents:—"They were once more common and more deadly than they are now."

CAMP DOUGLAS, UTAH, April 9th, 1877.

ARTICLE II.

TATTOOING AS A MEANS OF COMMUNICATING SYPHILIS; AN INVESTIGATION OF TWENTY-TWO CASES EXPOSED TO INOCULATION WITH THE VIRUS OF MUCCOUS PATCHES, IN FIFTEEN OF WHICH SYPHILIS FOLLOWED. By F. F. MAURY, M.D., Lecturer on Venereal Diseases at the Jefferson Medical College, Attending Surgeon to the Philadelphia Hospital; and C. W. DULLES, M.D., late Interne at the Philadelphia Hospital.

IN the beginning of September, 1877, a man presented himself in Dr. Maury's wards in the Philadelphia Hospital, having upon his arm a sore which had the characteristics of a chancre, and suffering from other evidences of constitutional syphilis. The chancre was situated upon a tattooed figure, which had been placed there about two and a half months before, by a "professional" tattooer who moistened his pigments in whole or in part by inserting in his mouth the needles he used. So interesting a matter at once engaged earnest attention, and led to the investigation, first, of this one case, and afterwards of others in this city and in Reading, where such extensive tattooing had been done that the physicians in the town had had their attention attracted to its evil results, and were glad to co-operate with us in determining their nature and extent.¹

With regard to the latter point, however, we have not been able to arrive at any, even approximate, conclusion. The number infected must be much larger than that which we have been able to reach. For six months has this tattooer had lesions, which are hereafter described, and during all that time been doing his work whenever he had an opportunity, in Philadelphia, Reading, Jersey City, and New York; and the majority of those tattooed must have received the seeds of his disease.

From the time our investigations began, the securing and examining the person of the tattooer was considered of the utmost importance, both in the interests of science and for the safety of the community. Consequently the police in different parts of the country were notified and search instituted for him. On the 13th of October he was arrested, with all his implements, in Philadelphia, and sent to the Philadelphia Hospital. He was there fully identified by a number of his victims; and later in the day was, at the suggestion of Dr. Maury, committed to the House of Correction, where he is at present.

The following is his history, as given by himself and carefully compared with the records of the Philadelphia Hospital and the statements of those whom he tattooed.

¹ At this point we wish to acknowledge with thanks our obligation to Doctors Marshall, Kalbach, Kuhn, Reeser, Ammon, Luther, and Weidman, of Reading, for facilitating our investigations in the latter city: and to Doctors Kerr and Anderson, internes at the Philadelphia Hospital, for assistance in different ways.

James Kelly, *æt.* 26, born in Bucks Co., Penna., by trade a painter, but actually a vagrant; was examined October 13th, and again, through the courtesy of Drs. Hendrie and Pennybaker, at the House of Correction October 25th.

A man of extremely bad habits, a very hard drinker, a constant chewer of tobacco, and of filthy personal appearance. He never had syphilis until early in February, 1877, when he contracted four or five chancres, followed by an inguinal bubo. Under self-treatment, he did so badly he was compelled, Feb. 17th, to betake himself to the Philadelphia Hospital, where he was treated locally by cauterization of the chancres with nitric acid, and the application of *lotio nigra* and iodoform. On March 6th he left the hospital and went to Reading, where he remained about a month, tattooing as occasion offered, then for a short time to Jersey City, and returned, April 14th, to the hospital to be treated for mucous patches in his mouth and condylomata about his anus. He remained here until May 16th, when he left uncured, and going to Reading continued his tattooing. From this time onward he seems to have communicated his disease to most of the subjects of his art.¹ Remaining in Reading nearly a month, he then went for a few days to Jersey City, and on June 20th turned up for the third time in the Philadelphia Hospital, with mucous patches and condylomata still flourishing. On August 2d he was discharged for insubordination, and went to Jersey City. About this time he had iritis. He remained in Jersey City until October 6th, when he returned to Philadelphia, where he was one week later arrested and committed to the House of Correction.

At the time of our examination he has slight inguinal adenitis, mucous patches in his mouth, and a condylomatous patch at the bottom of his scrotum. The mucous patches in his mouth are extensive. Two are situated back of the angles and just within the lips. These are the only present manifestation of syphilis.

The following was his customary method of tattooing: A figure having been selected from a book of plates which he carried with him, he would rub up India ink with water and pick the outlines in with a few needles set in a holder. Then putting the needles in his mouth and sucking out the residue of pigment, he would thrust them thus moistened into a bottle of powdered vermilion and insert what adhered. To renew the vermilion the needles were repeatedly wetted in his mouth. In some cases both pigments were moistened with saliva, and in others he spit upon the finished tattoo and rubbed it well with his hand or a dirty cloth he had. The figures he made were often very handsome, and always skilfully done. Indeed, this was his only means of livelihood, bringing him in fees ranging from a drink of whiskey to two dollars, according to the extent and elaborateness of his work.

Such, then, being the history of the tattooer and his method of operating, we will proceed to the consideration of its results as exhibited in the following twenty-two cases, which are not all that we have examined, but such as we think of sufficient scientific interest, as well as of sufficient accuracy to report.

¹ It will be noticed that all the cases here reported were tattooed at or after this time, *viz.* while he had mucous patches in his mouth.

It may not be amiss to state here that, to attain as much thoroughness as possible, a definite plan of examination was first prepared and each investigation conducted according to it; that every patient was examined by us personally and scrutinized from head to foot; that the asking of leading questions was avoided, especially in regard to the primary lesions, and that special inquiry was made to exclude the possibility of the syphilis, where it occurred, having been acquired in some other way than by the tattooing. Some apparent omissions in the accounts are attributable to the difficulties encountered from ignorance, forgetfulness, or unwillingness on the part of the patients.

We have arranged the histories in the following classes:—

I. Where the patients have never had syphilis, and yet were not inoculated so far as is now known.

II. Where the patients had syphilis before being tattooed.

III. Where syphilis had never existed, but was communicated by the tattooing.

CLASS I. Where the patients have never had syphilis, and yet were not inoculated, so far as is now known.

CASE I.—John M., *et.* 21, American, nurse, examined first September 25, and repeatedly afterwards, in the Philadelphia Hospital. He gives an unexceptionable family history. Fifteen years ago he had variola, of which the scars are very plain. He had gonorrhoea four years ago, and this year a stricture, which was successfully treated in the Philadelphia Hospital, while at the same time he was circumcised for congenital phimosis. He was tattooed by Kelly once in May and once in June. Two figures were placed on each arm, the pigments, India ink and vermilion, were mixed with Kelly's saliva. Yet since that time, save a day's inflammation of the arms, he has not had any ill effect. Careful and repeated inquiry and examination fail to discover any trace of past or present syphilis.

CASE II.—John E., *et.* 23, Am., iron moulder, examined in Reading, October 1. He gives a good family and individual history. He was tattooed by Kelly in June. The pigments used were India ink and vermilion. The former was mixed with water, but Kelly put the needles in his mouth to suck off the India ink before putting in the vermilion. After the operation was completed, the patient washed his arm carefully with spring water. Since that time he has had no syphilitic manifestations that he knows of, nor does our examination discover any.

CASE III.—Samuel F., a young man working in an iron foundry, examined in Reading October 1, gives a good family and personal history. He was tattooed by Kelly in June. The manner was similar to that in the other cases, in which though water was partly used to mix the pigments, the needles were often put by Kelly into his mouth. Since that time there has been no syphilitic manifestation whatever, so far as his history or our examination can discover.

CASE IV.—Joseph C., *et.* 37, Am., labourer, examined in the Philadelphia Hospital October 10. Five years ago had a chancre appearing about two weeks after exposure, and followed by a suppurating bubo in each groin. These burst. Afterwards he had, so far as his memory serves

him, no cutaneous eruption, nor any evidence of syphilis, except a year later, an ulcer on his right temple and one on his leg. At the same time he thinks he had swelling of the glands in the left axilla. He has never had alopecia, nor iritis, nor any syphilitic development on a mucous membrane. About the end of June he was tattooed by Kelly. Two small figures were placed on the dorsum of his left forearm, and upon his chest a large crucifixion. The pigments, India ink and vermilion, were mixed with water, but Kelly put the needles in his mouth after inserting the India ink so as to suck off what was left on them before putting in the vermilion. The tattooing was followed by a very insignificant local inflammation, and not a single evidence of syphilitic inoculation. At the time of our examination, three and a half months after being tattooed, the man is in perfect general condition. He has no adenitis, no alopecia, no eruption whatever. We think there is no evidence that he has had syphilis at any time.

This last case presents some difficulty in classification, but we place it in this list because it appears to us that the lesion described as occurring five years ago was not a true chancre. The account of the period of incubation cannot be relied on after so great a lapse of time. The lesion was followed by two suppurating buboes, which opened spontaneously, and by no distinctive syphilitic manifestations whatever. The ulcers, appearing a year later, we do not think can be fairly connected with the sore on his penis.

If in this we are not mistaken, we have then four cases where, for some reason, the subjects of the tattooing have entirely escaped syphilitic inoculation. It is possible that even yet it may manifest itself, but up to this time the immunity has been perfect.

CLASS II. *Where the patients had syphilis before being tattooed.*

CASE V.—William W., æt. 23, Am., laborer, was examined in the Philadelphia Hospital Sept. 22, and repeatedly afterwards. He gives a good family history; has been himself a steady but moderate drinker. In October, 1876, he had gonorrhœa, and in February, 1877, a phagedenic chancre, which destroyed his whole glans penis. This was followed by a papular eruption on his legs and mucous patches in his mouth, one of which was very large. While in the Philadelphia Hospital, and when these secondary manifestations were at their height, he was tattooed by Kelly. A figure of a bracelet was placed round each wrist. The pigments, India ink, coal dust and vermilion, were mixed with Kelly's saliva. There followed only a very trifling local inflammation, and no other effect that he knows of. At the time of our examination he has papules and squamæ in his scalp, an unhealed ulcer of the stump of his penis, and a serpiginous ulcer of the fibular side of his left leg.

CASE VI.—Thomas L., æt. 27, Irish, labourer; a man stubborn, ignorant, and mendacious, was examined, by courtesy of Drs. Morton and Kirkbride, at the Pennsylvania Hospital September 25, and once later. He gives a good family history. He denies any previous venereal disease, until our physical examination detects a fine parchment-like induration on his glans penis, when he admits he has had a chancre there in May, but still denies any cutaneous manifestation.

About the end of June he was tattooed by Kelly. The figure of a crucifix was placed on the ventral aspect of his right forearm. The pigment used was coal dust, which was spit upon by Kelly and picked in with needles. There followed moderate swelling of the arm, but no axillary bubo. In about a month there appeared, on a spot of the figure representing the left nipple, a papule, which did not itch. This he scratched with a pin, and it became a pustule, which spread until it formed an indurated and elevated ulcer, having a diameter of about three-quarters of an inch. This was poulticed, and an "Indian salve" applied; some time afterward he entered the Pennsylvania Hospital, where he was treated locally with *lotio nigra* and constitutionally with red iodide of mercury and iodide of potassium.

At the time of our examination he has on his body a few old maculæ. There are papules in his scalp, on his forehead, body—particularly where his waistband has pressed—legs, and soles. He has a few crusted pustules on his body. In his mouth is a mucous patch. The ulcer on his arm is healing nicely. On his glans penis is the indurated scar of his old chancre. He has enlargement of his post-cervical and right supra-trochlear glands, as well as those in both groins and over both saphenous openings.

This case we cannot place in any other class than this because of the peculiar scar upon his penis, which seems to be that of a chancre antedating his tattooing, and which we take to be the starting point of his syphilis.

CASE VII.—David M., *et.* 26. Am., coach painter, was examined in the Philadelphia Hospital Sept. 22, and repeatedly afterward. He gives a good family and personal history. Previous to this year he never had any venereal complaint, though for ten years he has led an irregular life. About the end of last April he contracted three sores upon his penis, which were treated with iodoform, and healed in six days.

On the sixth of May, while in the Philadelphia Hospital, and, he thinks, well, he was tattooed by Kelly. The operation consisted simply in putting in three radii of an incomplete eight-rayed star, two and a half inches in diameter, situated in the skin over the head of the right humerus. The pigment used was India ink, which was mixed with Kelly's saliva. Following this, there was considerable swelling of his arm, which passed off in a few days without treatment. In about two weeks, however, there were developed three papules, one on each of the newly made radii, which did not itch, but passed on to pustulation, broke, extended, and coalesced. To this sore he applied a salve of beeswax and lard. A bubo soon formed in his axilla, which subsequently subsided without suppurating. He next noticed that, after a short period of fever, a series of papules appeared between his scapulae. This he thinks was within a week of the appearance of the sores on his shoulder. The papules passed on to pustulation, and then he observed the development of squamæ and papulæ in his scalp. Then came enlargement of the post-cervical lymphatic glands, and three papulæ on his penis, with some on his scrotum.

At the time of our examination he has upon his right shoulder, covering the lower half of the star mentioned, a portion of skin of irregular outline, about two inches in diameter, elevated one-eighth of an inch above the general surface, indurated, of a coppery-red colour, and having near its centre an ulceration still more elevated and about half an inch in diameter. In his scalp are maculæ, squamæ, and papulæ, the same on his forehead, with a few papulæ and pustulæ distributed over his body. Upon his penis

are a number of papules within and without his prepuce, which is long and indurated. He has sore throat, a fissure of the right angle of the mouth, post-cervical adenitis and osteocopic pains.

This case may, perhaps, be one where the tattooing was the origin of syphilis, but the appearance of the lesion on the shoulder and the almost immediate appearance of the papular eruption between the scapulae make us hesitate to come to such a conclusion. For this reason we prefer to place it in this class, as though the sore which existed on his penis when he was tattooed had been indeed a chancre.

CLASS III. *Where syphilis had never existed, but was communicated by the tattooing.*

CASE VIII.—George F. B., *at.* 17, Am., ice carrier; examined in Reading, October 1, gives a good family history, and has had a healthy life, excepting a fever when five years old, and gonorrhoea and gonorrhoeal rheumatism four months ago; both of which were cured before he was tattooed. His habits have been free and easy.

About the middle of June, being quite well, he was tattooed on the right forearm by Kelly. The figure chosen was a shield, with three dark and two light bars. The pigments were India ink and vermilion. The needles were constantly in Kelly's mouth. A slight local inflammation followed, with reddening of the lymphatics up to his elbow, and glandular involvement. By an application of glycerine and cold water the arm healed, leaving, however, two weeks later five small elevations like mosquito bites, upon which were crusts. These papules itched, were scratched, and passed into pustules. They were treated some time later with a salve of red oxide of mercury and dry application of calomel, under which they healed. Five weeks after these sores the supra-trochlear gland became enlarged. About three weeks later, ten after the tattooing, he noticed squamæ in his scalp, then a mucous patch came in his mouth, and a condylomatous patch between his buttocks. He has for five weeks been under good specific treatment.

At the time of our examination he has a very few crusted papules in his scalp; a few scattered maculæ over his chest and abdomen; slight post-cervical and inguinal adenitis; some inflammation of the fauces, and, on the left of his anus, a small slightly elevated condylomatous patch, about a third of an inch in diameter.

CASE IX.—John N., *at.* 18, Am., brushmaker; examined in Reading, October 1; gives a good family and personal history; has led a free and easy, but not a hard, life.

About the end of May, being quite well, he was tattooed by Kelly on the flexor aspect of his right forearm. The figure was a dancing girl on an eagle, holding a flag in her hand; the pigments, India ink and vermilion, mixed with Kelly's saliva. There followed slight local inflammation, accompanied by a red streak up the arm. After an interval of five weeks there appeared at the lower inner corner of the flag a papule, elevated, indurated, with an areola and itching. It was scratched and formed a pustule, which persisted two months. Meanwhile it was once cauterized with an acid, and simple soap applied. Four weeks later, nine after the tattooing, there appeared a papular syphiloderm, most marked on his scalp and scrotum.

At the time of our examination we find his thighs a little marbled, papules on his hands and feet, on his right buttock two medium sized condylomata. The glands in his right groin are enlarged, and he has a beautiful post-auricular adenitis.

CASE X.—Cyrus S., *et.* 26, Am., boatman; examined in Reading October 2; gives a perfectly good family and personal history; is an occasional but not a hard drinker, and stands now a large magnificently developed man, weighing $195\frac{1}{2}$ lbs.

In June, being quite well, he was tattooed by Kelly on the back of the right hand. The figure was a ten rayed star; the pigments India ink and vermilion, mixed with Kelly's saliva. There followed a great deal of local inflammation and an axillary bubo. He did nothing for this condition, and in about a week, during its continuance, there appeared in the red colour a lump which, he says, was "like a pill" under his skin. This was painful, had an areola, itched, and was, as stated, indurated. It was scratched, became covered with a crust, by repeated removal of which it grew larger. In two weeks more, after a period of marked malaise and fever, there appeared a papular eruption in his scalp, on his forehead and face, in his nose, between his nates, on his penis, scrotum, palms and soles. Between his nates the papules developed into condylomata with "terrible" itching. In his mouth mucous patches also appeared. There were some pustules among the papules on his hands, feet, and penis. He has been off late under good treatment.

At the time of our examination, we find in his scalp and on his forehead and face traces of maculae and papules. His chest, abdomen, back, thighs, and legs are beautifully clean. Between his nates are traces of the former condylomata and a few papules. On the soles of his feet are scars of many old papules. His fauces are erythematous. On his upper lip, left side, is a small mucous patch. He has slight enlargement of the submaxillary lymphatic glands, post-cervical adenitis most noticeable on the right side, and marked alopecia.

CASE XI.—Jacob H., *et.* 18, Am., examined in the Philadelphia Hospital October 15, is a young man of good appearance, with a good family and personal history. He says he has never had sexual intercourse.

About the beginning of June, being in perfect health, he was tattooed in Reading by Kelly. The figure of an eagle with a scroll in its beak, surmounted by a crown and two letters, was placed on the flexor aspect of his right forearm. The pigments, India ink and vermilion, were mixed with Kelly's saliva alone. There followed scarcely any local inflammation. In about seven weeks there appeared on the right wing of the eagle two papules, which he compares to mosquito bites, developing into pustules, and soon followed by one on the crown and two on the scroll. There came in a short time a red streak extending up toward the axilla, and an axillary bubo. The pustules he burnt with nitrate of silver, and got some medicine from a doctor. Five weeks after the appearance of the papules there appeared a papule on his penis, then two on his scrotum, a few about his anus, a few on his head, and three on his left hand, with soreness of his gums and throat. About six weeks ago, when in the condition just described, he was treated locally and constitutionally with good results.

At the time of our examination he has two or three nearly cured papules in his scalp, and as many in his left palm. His fauces are deeply inflamed and swollen; his gums inflamed and ulcerated; he has alopecia and enlargement of the inguinal glands on both sides.

CASE XII.—Edward W., æt. 20, Am., wool-washer; examined, by courtesy of Prof. Wm. H. Pancoast, in the Philadelphia Hospital Sept. 21, and repeatedly afterwards; gives an unexceptionable family history, and has always been healthy until last spring, when he had an attack of typhoid fever, which was treated in this hospital. He has been of steady, temperate habits, and never had any venereal disease.

About the end of June he was tattooed by Kelly, upon the flexor aspect of the left forearm. The figure was a goddess of liberty seated upon an eagle, and bearing an American flag; the pigments were India ink and vermilion, *mixed with pure water*. The operation was followed by a moderate and transient degree of local inflammation without any involvement of the lymphatics. Two weeks before this he had been tattooed by the same man on the flexor aspect of the right arm with the figure of a crucifixion. On the radial side of the figure and in the background were two oriental looking buildings, and on the ulnar side a small tree. The pigments, coal-dust and vermilion, were *mixed with Kelly's saliva*. The arm soon became extremely inflamed and swollen. This inflammation, however, subsided in four or five days, and he observed no involvement of the lymphatic vessels or glands.

In about a month there appeared on the ulnar side of the base of the figure, a papule, which he compares to a mosquito bite. It itched much, was scratched, became purulent, and enlarged until there was a circumscribed ulceration three-quarters of an inch in diameter, with a flat, somewhat elevated, indurated base, and a well-defined areola. This process the patient watched carefully and describes accurately. At the time of the development of the papule the glands of the right axilla became enlarged. Six weeks later, about ten after the tattooing, a macular syphiloderm developed upon his forehead, chest, belly, and legs, in this order, followed by a mixed squamous and papular syphiloderm.

At the time of our examination the patient appears in excellent general condition. He is a stout, well developed, healthy looking young man. The ulcer described still persists on his right arm. On his forehead is a light, brownish syphiloderm. There are papules in his scalp, a few on his arms and back, very many on his palms and soles, and about his anus many passing into condylomata. His scrotum is so thickly covered with flat papules that it is hard to discover any interspaces. There are very many on his penis. Within the prepuce these are excoriated and closely simulate chancres in a similar stage. On his thighs are some pustules as well as papules. He has also distinct right-sided post-cervical adenitis.

CASE XIII.—Joseph P., æt. 20, Am., iron moulder; examined in Reading October 1. His family history is perfectly good. About a year ago he had inflammatory rheumatism, lasting ten weeks. He has never had any venereal disease. His habits have been regular and steady.

In June, being perfectly well, he was tattooed on the flexor aspect of the right forearm, by Kelly. The figure was a 2, upon which lies a ladder. The pigments were India ink mixed with water, and vermilion mixed with Kelly's saliva. There followed slight local but no glandular inflammation. This received no treatment. In about three weeks appeared a papule, elevated, indurated, and itching. This was scratched and developed into a pustule, which enlarged to about a half inch in diameter. It was treated with lead-water and laudanum, then later with lotio nigra and calomel, while he took some internal medicine.

Ten days after the appearance of the papule, without preceding fever,

the lymphatics of his arm became red and his axilla tender. Then appeared a macular and squamous syphiloderm, followed by papules around the corona glandis penis, and along the raphe, with a mucous patch in his mouth, swelling of the papillæ of the tongue, and sore-throat.

At the time of our examination the patient complains of indisposition, with pains in his back and stomach. Old maculæ are distributed over his scalp and legs; on his back, penis, and scrotum are a few papules, and many in his palms and soles. On the inside of the right cheek is a small mucous patch. His submaxillary, postcervical, and inguinal glands are enlarged, and he has some alopecia and sore-throat.

CASE XIV.—Charles P., æt. 19, Am., Japanese; was examined in Reading October 1. His family history is good. Four years ago he had typhoid fever; three months ago—since being tattooed—he had gonorrhœa. He says his habits have been regular, and he is not addicted to excessive venery.

About the middle of June, when in perfect health, he was tattooed on the flexor aspect of the right forearm, by Kelly. The figure is very large and thickly coloured. It represents a naked woman kneeling on a pedestal, under a dense weeping willow tree. The pigments, India ink and vermilion, were mixed with Kelly's saliva. For a week the arm was very sore, and a gland in the axilla swelled, but soon subsided. To the arm cold water was applied. In about two weeks appeared on the figure a single papule, which had a distinct areola, was indurated, elevated, and itched; yet was not scratched. It developed into a pustule, ruptured, became encrusted, and healed in two weeks without treatment. About two weeks later appeared, below the figure, a flat papule, accompanied by an axillary bubo. At the same time came a general macular syphiloderm, which desquamated and was succeeded by papules, which were profuse on his penis—he thinks there were seventy-five! He also had condylomata between his toes. At the time of our examination—three and a half months after his tattooing—he has maculæ and squamæ on his scalp, and a well-marked corona veneris. There are papules on his chest, back, arms, legs (arranged in circles in the popliteal spaces), penis, scrotum, and soles. In his nose are crusted papules, on the right side of his uvula is an ulcer. The corresponding submaxillary gland is enlarged. He has also bilateral inguinal adenitis and well-marked alopecia and sore-throat.

CASE XV.—Thos. G., æt. 23, Irish, iron puddler; examined in the Philadelphia Hospital September 21, gives an unexceptionable family history; has had no serious illness before, nor any venereal complaint; has been a steady, but not a hard drinker.

About the middle of June—at a time when he was under treatment in the Philadelphia Hospital for traumatic orchitis, but otherwise well—he was tattooed by Kelly on the flexor aspect of the left forearm. The figure was that of a cross upon which was a wreath and a heart. The pigments, coal-dust and vermilion, were *mixed with fresh water*. Following the operation there was some soreness of the arm, lasting two days, and enlargement of the axillary lymphatic glands. Both these subsided readily.

Three days previous to this tattooing Kelly had put on the flexor aspect of his right forearm the figure of a crucifix, with a background of two oriental looking buildings on the radial side, and on the ulnar a small tree. This time the same pigments were *moistened with Kelly's saliva*. The arm became much inflamed, and the next day a gland above the internal condyle of the humerus and one in the axilla were enlarged; of these the

former subsided soon. The local soreness lasted three days, but required no treatment. About five weeks later, at a point upon the trunk of the tree alluded to, appeared two papules—which he compares to mosquito-bites. These developed into pustules, with indurated bases, burst and coalesced, leaving an elevated suppurating surface, about three-fourths of an inch in diameter, with a distinct areola, which he treated, himself, with cosmoline and iodoform. About this time the bubo in the axilla suppurated and discharged spontaneously. About ten weeks after the tattooing, and five or six after the appearance of the sore just described, he had a short period of feverishness and indisposition, and then appeared a papular syphiloderm, accompanied or followed by a fissure of the right angle of the mouth.

At the time of our examination he has papules on his scalp, back, arms, penis, scrotum, nates, legs, palms, and soles, as well as between his toes. The number on his palms is very remarkable. On the cutaneous surface of his prepuce are papules, closely resembling hard chancre, while on the mucous surface are ulcerations simulating chancreoids. The fissure of the right angle of the mouth persists. He is suffering from a balanitis and gonorrhoea contracted recently. He has post-cervical adenitis, and is in a very much poorer general physical condition than he ever was before the tattooing was done.

CASE XVI.—Frederick R., *et.* 21, Am., brickmaker; examined in the Philadelphia Hospital September 25; gives a good family history; has been of tolerably steady habits; many years ago had an inguinal bubo, from over-walking; four years ago had gonorrhoea, from which he inoculated his left eye with gonorrhoeal ophthalmia, resulting in its almost total destruction. About the end of May he was tattooed by Kelly. On the dorsal aspect of the left forearm was placed a dancing girl, and near it a cross, heart, and anchor. On the inner side of the upper arm was placed a goddess of liberty on an eagle. The pigments, India ink and vermilion, were mixed with Kelly's saliva. The day following his arm was much inflamed, and a bubo formed in the axilla. Both the inflammation and the bubo passed away in a few days. A gland *below* the inner condyle of the humerus now became enlarged and painful, and then subsided. Four weeks from the date of tattooing there appeared two swellings, one above the right knee and one on the left foot of the figure of the dancing girl. These he compares to a boil, with pus at the apex. They itched, were scratched, and crusts formed upon them. Later, appeared a fissure of the left angle of his mouth, and papules on his tongue, penis, and scrotum, and about his anus, as well as one or two on his left palm and one on his right foot. At our examination we find on his body traces of a macular syphiloderm; about his anus are three patches of ulcerating hypertrophic papules; two similar patches on the left and one on the right side of his scrotum; traces of two healed patches also on his scrotum; one such patch in each thigh; and one on the right calf; his pharynx and fauces are inflamed; his tongue swollen and fissured; a mucous patch inside the left angle of his mouth and one inside the lower lip. His eyes are inflamed, and seem to threaten iritis. He has post-cervical adenitis.

CASE XVII.—Daniel H., *et.* 21, Am., labourer; examined in the Philadelphia Hospital September 26; gives a family history of phthisis, himself has always been healthy and of steady habits, though an occasional drinker; has never had any venereal disease. A year ago he was tattooed on the right forearm. No evil results followed.

In the latter part of May of this year he was tattooed by Kelly on the dorsal aspect of the right forearm. The figure was a goddess of liberty upon an eagle; the pigments, India ink and vermilion, mixed with Kelly's saliva. He was at the same time tattooed in the same way, on the left arm, with the figure of a little girl holding a bouquet in her left hand. Both these figures were followed by great local pain and swelling, and involvement of the axillary glands. The latter, however, subsided in a few days. In about three weeks there appeared on the figure on his right arm, and later on the other, a number of papules, which multiplied until on the former there were seventeen and on the latter twenty-four. In the latter case the papules appeared wherever the vermilion had been used. The first appearance of these papules the patient compares to mosquito bites. They were indurated and elevated, and had an areola; they itched, were scratched, became purulent, and formed crusts. A number of them were cauterized by a physician, an ointment applied, and they healed up in about a fortnight. The rest healed spontaneously. No axillary bubo followed. About the middle of July, about six weeks after the tattooing and three after the first syphilitic manifestation, a papular eruption appeared on his scalp, penis, scrotum, palms, and soles, and in his nasal cavity and external auditory canals. Later, on his forehead and lips was developed syphilitic impetigo. In three months from the time of tattooing mucous patches appeared in his mouth. Since the early cauterization he has been treated with "roots" by a snake doctor. At our examination we find many desquamating papules in his scalp, a few large papules on his abdomen, three smaller ones around his corona glandis penis, one on the frenum, four on the scrotum, nine on his thighs, one in the left popliteal space, and the traces of very many on his palms and soles. On his forehead are four beautiful crescentic patches of impetiginous pustules, and on his lips several more. His lips and mouth are covered with mucous patches, and about his anus he has *immense* condylomata.

CASE XVIII.—John G., æt. 16, Am., machinist; examined in the Philadelphia Hospital September 29; his family and personal history is excellent. About the end of May, when in perfect health, he was tattooed in Reading by Kelly, on the flexor aspect of his right forearm. The figure was that of a dancing girl; the pigments, India ink, mixed with water, and vermilion, mixed with Kelly's saliva. After pricking in the colors, Kelly spit on the patient's arm and rubbed it well. Slight and transient local inflammation followed, for which cold water was applied, but there was no glandular swelling. In four weeks there appeared on the left shoulder of the figure a papule, indurated, itching, and having an areola, followed, the next week, by six similar ones, scattered over the figure. They all developed into pustules under the influence of scratching. He now received treatment, which he describes as a salve and powders. Two weeks later, six after the tattooing, without preceding fever, a number of small lymphatic glands below the elbow-joint enlarged, and a lymphatic vessel, running from them to the axilla, became hard, like a whip-cord. These conditions persist at this time. He next noticed a papular eruption on the soles of his feet, with a few papules on his back and neck, the latter developing into pustules. He now treated himself with gin and mandrake roots. At the time of our examination, a little more than four months after his tattooing, we find his scalp clean, patches of copper-coloured spots on his forehead, papules in his nasal cavity and right external auditory meatus, on his face, a few on his chest, several hypertrophic and encrusted

on his abdomen, one in his right axilla, quite a number of medium size on his back and buttocks, many on his arms, penis, scrotum, thighs, shins, and both soles. There are a few pustules on his back. Between his nates are three condylomatous patches, and others between the toes of both feet. He has slight erythema of the fauces and a large mucous patch on the roof of his mouth. He has not very well-marked post-cervical adenitis.

CASE XIX.—Alvin S., *et.* 20, Am., teamster; examined in the Philadelphia Hospital September 29; gives a perfectly good family and personal history, except that he had, in 1875, a gonorrhoea lasting seven months, and in 1876 another attack which was cured in two weeks; his habits have been pretty steady, though occasionally indulging in venery.

About the end of May, 1877, being perfectly well, he was tattooed by Kelly on the flexor aspect of his left forearm; the figure was that of a dancing girl; the pigments India ink mixed with water, and vermilion mixed with Kelly's saliva. There followed a slight local inflammation lasting but two days, and presenting no involvement of the lymphatics, which he did not think demanded any treatment. Two weeks from the tattooing there appeared on the breast of the figure three papules, then two more on the left lower part of her scanty dress, and a week later on the crossed ankles another. These were hard, elevated, and red; spread into flat papules, desquamating somewhat, and finally secreted a little pus. Soon after their appearance they were cauterized, and the patient constitutionally treated by a regular practitioner. In about two weeks, without any preceding fever, there appeared upon his legs below the knees, a squamous syphiloderm, followed by many papules and pustules on his thighs, scrotum, and penis. Of the latter some were excoriated. About the same time he noticed an enlargement of the left supra-trochlear gland. For this stage of the disease also, he was treated constitutionally.

At the time of our examination he had a gonorrhoea two weeks old; in his scalp are many maculae, and a few on his chest and shins; there are a few papules on the side of his nose, and some encrusted ones in its cavity, many on his thighs, and a number on both soles. There are a few pustules on his back—perhaps acne. Between his nates are two condylomatous patches, and others between the third and fourth, and fourth and fifth toes of the right foot. He has erythema of the fauces, an ulcer on the right side of the uvula, mucous patches on the edge and lower surface of his tongue, very large ones inside the angles of his mouth, and smaller ones within both lips. One seems to be developing on the roof of his mouth. He has marked submaxillary adenitis, alopecia, and left iritis.

CASE XX.—James F. P., *et.* 25, American, iron moulder; examined in Reading October 1; gives a good family and personal history, except that two years ago he had an attack of gonorrhoea which lasted four months. His habits have been pretty good, and he never drinks. Years ago he had a suppurating bubo in the left groin from an ingrowing nail. He was tattooed by Kelly about the middle of June, being then perfectly well. A female bust was placed upon the flexor aspect of his right forearm, and above it two crossed branches. The pigments, India ink and vermilion, were mixed with water and Kelly's saliva, the needles being frequently put in his mouth. There was slight and transient local inflammation, and no glandular involvement. He applied cold water to his arm. In four weeks there appeared upon the tattooed figure, many small papules, which were not sore nor purulent, *nor have they ever been abraded or excoriated*, though now having a tendency to scale a little.

They received no treatment. In about six weeks from the date of tattooing, there appeared on his forehead and penis a papular eruption, then later mucous patches on the tip of his tongue and the sides of his gums. For these he had no treatment.

At the time of our examination we find a few papules on his body, and between his nates, two on his corona glandis penis, crescentic patches in his popliteal spaces, a few on his knees, shins, and ankles, his palms and soles crowded with them. In his mouth are a number of mucous patches. He has post-cervical, submaxillary and inguinal adenitis, with marked enlargement of his right supra-trochlear gland, and one behind his left ear. He has also alopecia and osteocopic pains.

CASE XXI.—George H., *et.* 23, American, laborer; examined in Reading October 2; gives a good family and personal history; has been of somewhat irregular habits, but not a hard drinker. About the end of May, being quite well, he was tattooed by Kelly on the left forearm. The figure was a goddess of liberty with a flag, and two crossed branches below; the pigments were India ink mixed with water, and vermilion mixed with Kelly's saliva. Kelly also spit on the arm and rubbed the colours in. There was considerable local inflammation, but it was treated simply with soap and water. In about two weeks there appeared a papule in the middle of the crossed branches, and in two days three more near by. They developed into pustules and formed deep ulcers which were treated and healed in three weeks. The scars persist, and are about half an inch in diameter. A month after these papules he had a period of fever with marked malaise, followed by a general erythematous eruption, then maculæ and squamæ on his chest and shins, followed by papules on his head and forehead, in his nose, on his arms, legs, palms, and soles, and between his toes. Later he had mucous patches in his mouth and condylomata about his anus.

At the time of our examination we find a few maculæ on his chest. There are traces of very many small papules on his forehead. Papules in various stages of development or recession are distributed over his back, abdomen, thighs, popliteal spaces, shins, ankles, palms, and soles. On his left arm is a fine crust from a vaccination done twelve days ago. On the tattooed figure of liberty are scars of the four pustules named above. His fauces are red and ulcerated; on the roof of his mouth are large mucous patches, and others on his gums. His tongue is swollen, ridged, and furrowed, and has on its left edge a mucous patch. The supra-trochlear glands in both arms are enlarged. His general condition is bad; he is sleepless and miserable, suffering much with osteocopic pains.

CASE XXII.—William L., *et.* 21, Am., butcher; examined at the House of Correction Oct. 25; gives a good family and personal history; is of healthy general appearance. His statements are clear and positive. In September of last year, on the occasion of his twentieth birthday, he drank, and had intercourse with a prostitute. Ten or fifteen days later, without any other exposure, he noticed, on the left side of his glans penis, a sore, which a friend told him was a "chancre." This soon became an ulcer, and he got some nitrate of silver and cauterized it. He took no other measures in this connection. The crusts which formed upon the ulcer adhered to his shirt, and were a number of times pulled off. Once, when the sore was a week or two old, he had intercourse with a woman, and the crust came off and remained in her vagina. In a few weeks the ulcer healed. Upon careful and exhaustive inquiry he states that he had no subsequent lymphatic or cutaneous evidence of syphilis. However, he

suffered all the following winter with tonsillar enlargement, which he believed to be mumps, and which was much relieved by a gargle of vinegar and cayenne pepper. In February of this year—five months after the sore on his penis—there appeared on the outer aspect of his right thigh, about nine inches below the position of the trochanter major, a sort of a blister, which spread to a diameter of about an inch and became encrusted. Some weeks later a similar but smaller ulcer formed six inches higher on his thigh. After trying in vain to heal it by poulticing he went, on April 27, to the Philadelphia Hospital, where he was admitted to the venereal ward. Here the sores were diagnosed as syphilitic rupia; the crusts, which are described by the interne, Dr. Oliver, as like a tortoise-shell and of a dirty blackish-brown colour, came off; local canterization with nitric acid was used, and the protiodide of mercury administered internally. In about a month the ulcers were healed.

About the end of June, while acting as an assistant in the hospital, he was tattooed by Kelly on the flexor aspect of the left forearm. The figure was a crucifixion, the pigments India ink and vermilion, both of which were moistened solely with the tattooer's saliva. There followed slight and transient local inflammation, requiring no special treatment. In ten days he noticed three sores upon the tattooed figure, one on the right hand, one on the left shoulder, and one on the left wrist. These, he says, were like the bite of a "mosquito or bedbug." They itched, but were not scratched for fear of "poisoning" them. They soon secreted pus, and became ulcerated. In about a week an axillary bubo formed. He now became alarmed, and consulted Dr. Oliver, who describes the sores as small papules, situated on a plainly indurated base, with an areola which faded out toward the circumference. They soon developed into pustules, and later into excavated ulcers, which were cauterized with nitric acid, after which they became encrusted. At the time of cauterization he was placed upon anti-syphilitic treatment. He now permitted Kelly to tattoo both his upper arms, but made him mix his pigments with water. No evil results followed these operations. He noticed no evidences of secondary syphilis until two months later, when there appeared papules in his nose and mucous patches in his mouth.

At the time of our examination, four months after the tattooing, we find on his left forearm three hypertrophic papules covered with thick adherent scales, and surrounded by areas of thin bluish skin. These are the remains of the primary lesions described above, and are the exact counterpart of what we found on many of the other patients of this class. On his body are remains of a beautiful macular syphiloderm, of which he says he was not aware when it came. There are some papules in his nose, and many in his palms and soles. He says there have been none on his genitals. He has mucous patches in his mouth; an extensive one over the ascending ramus of the right maxilla inferior; one on the right side of the lower lip; and a number of small ones on the roof of his mouth. The only adenitis we can find is a trifling enlargement of both supra-trochlear glands; perhaps a slight enlargement of the right inguinal glands, and in his left axilla remains of the bubo. He has marked alopecia, and complains of severe muscular pains as well as of pains in his bones. On the left side of his glans penis is a small teat-like scar, which when pinched gives a feeling of slight induration. Upon his right thigh are the scars of the sores which he connects with his chancre acquired in September 1876. The lower or earlier one presents a thin-skinned, elevated, slightly indurated, ham-coloured

surface, oval in shape, about three-quarters of an inch in its longer, and half an inch in its shorter diameter, having extending to a distance of half an inch from its margin, all round, an areola of thin dusky skin. The upper or later lesion is similar in character, but smaller. The inner elevated and indurated part is less than a centimetre, and the total, including areola, about half an inch in diameter.

There is some difficulty in assigning this case its proper place; but we conclude it is one where syphilis was communicated by the tattooing, in spite of the singularly clear and honest statement of the patient in regard to his previous history, and in spite of the scar on his penis, the sore-throat, and the appearance of the lesions occurring after what he himself believed an infecting or true chancre, and which he believed to be syphilis. This conclusion depends upon the patient's positive and distinct statement that these two, the sore-throat and the ulcers on his thigh, were the only things simulating secondary syphilis which he observed. He had after his chancre no bubo, no eruption, no crusts in his head, no alopecia, no iritis. When to this we add the history and appearance of the lesion which followed his tattooing, and the condition in which he is at the time of our examination, we are brought to the conclusion, partly stated above, that his lesion last September was a chaneroid—not a chancre—that his sore-throat was probably a tonsillitis, and that the ulcers in his leg were probably ecthyma, and not rupia, as at first sight they might appear. Consequently we include the case among those in which syphilis was for the first time communicated by the tattooing.

Resumé.—These fifteen cases of Class III. present a number of points of great interest which we will examine, so far as possible, in their natural order.

The first of these points is in regard to the method of inoculation. In every case we find that the needles used for tattooing were repeatedly inserted in Kelly's mouth; saliva was used to moisten at least one of the pigments. Can we then say the saliva was the contagion? No; for we find equally that all the cases in Class I., who never had syphilis, and present as yet no evidence of it since their tattooing, were exposed to apparently as great risk of infection; and must conclude that we have not here any ground to doubt the general belief that *the unmixed salivary secretion cannot communicate syphilis*.

On the other hand, the existence and the special location of the mucous patches in Kelly's mouth seem to offer a reasonable and satisfactory explanation of the effects of his tattooing. Nothing is more probable than that, in the repeated application of the needles to his lips, the sucking, the wetting of them, they in most cases bore away virus from the lesions which were so conveniently situated for this; while, also, nothing is easier to suppose than that the immunity in some cases was due to the fortuitous absence of this virus.

A question might suggest itself as to the influence of tobacco juice

mingled with the virus. From our examination of the cases here given we are led personally to the opinion that it did not have any, either in diminishing or increasing its activity.

In Cases XII. and XV. we have beautifully contrasted the innocence of tattooing with water, and the serious result when the saliva was used. We frequently observed that when one pigment was mixed with water and the other with saliva, the primary lesion had its origin unmistakably where the latter was used.

In the *immediate effects* we find considerable variety, but in none any specific evidence of a constitutional infection; this comes out first with the appearance, after a period of incubation varying from one to seven weeks, of a lesion which is of the utmost interest for us.

What was this primary lesion? Our inquiry (in which we particularly avoided asking leading questions) secured answers which, though varied, were unmistakable. Some compared the first manifestation to a pimple, some to a mosquito or bedbug bite, and one to "a pill under the skin;" all presenting the essential characteristics of local swelling and induration which mark a papule. In most cases this papule, like any other of its class, passed on, under accidental influences, to excoriation, ulceration, or pustulation; yet in one remarkable instance (Case XX.) there were none of these modifications, but from first to last *only and simply papules*.

In other words, these cases present a beautiful illustration of the nature and progress of a chancre, which we would define as in the beginning a papule excited by a specific irritant, undergoing modifications as varied as the circumstances in which it is placed, and followed sooner or later by other manifestations of syphilis. (This is the only sense in which the term is used by us.)

The theory of Diday, that the initial lesion of syphilis, contracted from the virus of a secondary manifestation, is an excoriated sore as contrasted with the ulcerated form when the poison was primary, does not seem supported by the facts of this series of cases; for, on the contrary, we find every variety, from the simple, unabrased papule to the deep and multiple ulcer.

The multiplicity of the initial lesion in some of these cases is not remarkable when we consider the means of inoculation.

The varying terms of incubation of the primary lesion—from one to seven weeks—as well as those of the secondary manifestations—from one to six weeks more—may or may not have been what the patients stated. We have no means of correcting their statements, and can only reproduce them with this explanation, and without attempting any generalizations founded upon them.

After the appearance of the initial lesion there was, then, a period of incubation varying, as the patients believed, from one week to six weeks, followed by—

The manifestations of "secondary" syphilis.—In three cases these were ushered in by fever and malaise; in one the glands just below the bend of the elbow were enlarged; in five the supra-trochlear gland (gland of Ricord). In three cases there was reddening, and in one persistent whipcord-like induration of a lymphatic vessel. In six cases the glands in the axilla were involved. It is noticeable that in one case the axillary bubo suppurated and discharged spontaneously—an example of the rare but possible occurrence of a suppurating bubo following a chancre. There were four cases in which we could not satisfy ourselves of the implication of near lymphatic glands.

Following or accompanying this stage we find the manifestation of syphilis on the cutaneous and mucous surfaces. Of the earlier and more transient forms—erythema, maculae, and squamæ—we found it in some cases difficult to obtain any satisfactory evidence; in some, however, we found distinct traces, though the patients themselves had not been aware of their occurrence. But when we looked for the papular eruptions there was no such difficulty. The history was well impressed on the patients' minds, and the present evidence often only too obvious. A glance over the summary shows that these were, in most cases, of an extremely grave character. In twelve of the fifteen cases there were mucous patches or ulcers in the mouth. In one the patches were very numerous, and in two both numerous and extensive. In one case there was a fissure of the angle of the mouth. In ten cases there were condylomata, which were, in one of them, immense. In one case there was well-marked impetigo on the forehead and lips. In one there was iritis; in nine post-cervical, in two post-auricular, in six inguinal, in five submaxillary, adenitis. In seven cases there was alopecia, and in three osteocopic pains.

A noteworthy point seems to us the frequency with which the papules were located on the penis and scrotum. This occurred in twelve cases, in seven of which the number was very great. In many the papules situated on and within the prepuce, and about the corona glandis penis, were in their physical features exactly like chancres. (See, for example, Case VII.) In twelve cases there were papules developed in the soles, and in ten in the palms. In seven they were developed in the nasal cavity, becoming a cause of grave annoyance. In two there were papules in the external auditory meatus.

The result of auto-inoculation, practised on two patients who had plain manifestations of syphilis, was as follows:—

CASE XV.—On September 19th we scraped, with a tenotome, a little secretion from the primary lesion on his right arm, and inserted it in his left upper arm by scarification. This was covered with a watch crystal, held in place by a fenestrated band of adhesive plaster.

The second day there was a slight reddening of the part scarified, and apparently a little thin serous secretion under the glass. The third day both these seemed greater. The fourth day the epidermis was elevated and

macerated, and a superficial ulceration, about a sixth of an inch in diameter, beginning. Over this was the grayish-white coating of epidermis; around it was a narrow areola. It was moist, and gave material pain. The fifth day the areola was less; the ulcer about the same. The sixth day there was scarcely any areola; but the ulcer was deeper. The seventh day the areola was apparently unchanged; but the ulcer acquiring an irregular edge, and having a thin deposit covering it. The eighth day the ulcer was reduced in size, and the areola had disappeared. The ninth day no observation was made. The tenth day the ulcer was almost healed; but the patient complained of much pain. So the glass was removed, and we found its upper and lower edge had cut into the skin, making with the irritation of the secretions of the ulcer, two others, linear and ugly, each about three-quarters of an inch long, and just like their predecessor in character.

As we did not think the study of these would add any material point to that of the one we had made designedly, we applied to them, and the trace of it that was left, *lotio nigra*, under which all healed up nicely in three or four days more.

CASE XII.—On September 25th we scraped off, with a tenotome, a little of the secretion of the primary lesion on his right arm, and attempted to insert it in the left forearm by a simple puncture, in which we turned the point once around. In covering the spot with a watch glass we avoided the danger of producing such trouble as we had in the other case, by enclosing the glass between two fenestrated strips of plaster, placed face to face, of which the outer or upper was longer than the inner, and tailed—the tails serving to fix the whole, and keep it in position.

The patient was under observation for about two weeks longer, at the end of which time he eloped from the hospital. So far the result was entirely negative, save perhaps an insignificant reddening of the point of puncture the day after it was made.

In reviewing these two cases, we find, in the former the virus from a primary syphilitic lesion—a chancre—producing by auto-inoculation an ulcer presenting the features of a so-called chaneroid.

Upon the apparently negative result in the second case we do not think anything can be predicated, for the time of observation was too limited; and, besides, we have no right to assume that the inoculation was successfully executed.

The theoretical conclusions of our investigation are, we think, indisputably confirmatory of the view that *the virus from secondary syphilitic manifestations is in a high degree inoculable, that the primary lesion following such inoculation is a true chancre, and that with this begins constitutional syphilis, differing in no essential point from that contracted from a primary syphilitic lesion.*

The practical conclusions are inseparable from the theoretical, viz., that too great caution cannot be used lest by any means the virus of inoculable lesions be transferred to innocent persons. The hands of the surgeon, his instruments, bandages, or other appliances should be most scrupulously cleaned after use about syphilitic patients. Dentists may especially take to heart this lesson, which is the more deeply impressed upon our minds,

because, at this time, we are investigating a case where an unsuspecting woman was inoculated with syphilis of a most malignant type, while under a dentist's hands.

Tattooing, we think, might well be forbidden in the army and navy, as a useless and perhaps pernicious practice, one which may injure the men and prove an expense to the government, by bringing into hospitals and on the pension lists some who might otherwise be in active service.

We think, too, that no false sentiment should prevent the distribution of such warning to the community as shall acquaint them with the sources of danger alluded to, as well as the possibility of syphilitic inoculation in the acts of kissing, nursing, using in common table utensils, towels, or anything which may come into contact with a syphilitic lesion.

ARTICLE III.

DISEASE OF THE SACRO-ILIAC SYNCHONDROSIS. By CHARLES T. POORE, M.D., Surgeon to St. Mary's Free Hospital for Children, and to Charity Hospital, New York.

CASE I.—A. B., aged four years, was admitted into St. Mary's Free Hospital for Children January 31, 1877. She is a perfectly healthy looking child. Family history good. Her mother gives the following account of her illness. Last August she began to limp a little, especially when she walked fast or attempted to run; at this time she did not complain of any pain. Four weeks later she complained of pain in her left knee. She was then seen by a physician, who said that she had disease of the left hip-joint. During the winter her lameness gradually increased, and another physician who had charge of her inclined to the opinion expressed by the former attendant, although he stated that there was an absence of any tenderness, heat, or swelling about the joint. On admission, the following was her condition. There was no change in the contour of the parts about the left hip-joint: no atrophy of the muscles. Motion at the hip-joint was perfectly free, smooth, and painless, except when carried to extreme rotation inwards or outwards, or forced flexion, when she complained of pain between the trochanter major and the sacro-iliac joint, and at the knee. There was no lordosis when the thigh was extended on the pelvis, and no tilting of the latter. Pressure on the trochanter major, or striking the sole of the foot with the limb in an extended position, caused pain behind the hip-joint. Pressure on the left ilium, either at right angles to the body, or backwards, caused pain at the left sacro-iliac synchondrosis. There was pain on pressure over the left sacro-iliac joint. She complained, when up, of pain on the outer aspect of the left thigh, lower portion of left leg, and at the knee. There was no swelling or tenderness over the hip-joint below Ponpart's ligament, nor behind the trochanter major. When in bed she could flex, extend, and rotate the thigh without any pain. In walking there was nothing characteristic in the way she carried herself, except that she threw the weight of her body on the sound side. When in bed she had no pain day or night, but always

suffered when on her feet in the localities mentioned above. There was no real, or apparent, difference in the length of the lower limbs.

March 29. Has been kept quiet in bed. To-day extension was applied.

April 4. Since the 29th she has been crying much from pain in the left thigh, knee, but especially about the lower portion of her leg. On removing the weight it passes off, only to appear when the extension is put on again.

23d. Plaster of Paris bandage applied around the pelvis, but it had to be removed in a few days on account of the pressure.

June 6. Patient fell out of bed last night, and to-day complains of pain in her left thigh, and upon motion; the parts are swollen and tender.

7th. She was to-day removed from the hospital.

CASE II.—D. W., aged five years, was admitted into St. Mary's Free Hospital for Children April 7, 1877. The following imperfect history is all that could be obtained. Last October he complained of pain at intervals about his right hip, which gradually increased. He became lame, and was supposed to have disease of the hip-joint. He has always rested well at night, and suffered no pain when in the recumbent position. There is no history of any fall or injury. On admission, the following was his condition. When standing there was a marked difference in the contour of the hips: the right was bulged out, so as to form a curve beginning at the lower ribs, having its greatest point of convexity just below the crest of the ilium, then curving inwards and ending at the lower border of the nates on that side, which was lower, and more pointed than on the left side. This bulging out was caused partly by his position, and partly by an abscess which occupied the gluteal region. The right limb was atrophied, as well as the muscles forming the gluteal group. Motion at the hip-joint was perfectly free, smooth, and painless, except in forced flexion and rotation, when he complained of pain at the sacro-iliac joint. There was no lordosis when the thigh was extended on the pelvis. Pressure on the trochanter major, or striking on the sole of the foot, when the limb was extended, caused pain at the right sacro-iliac synchondrosis, and any movement of the ilium of that side on the sacrum caused the patient to cry out from pain. There was exquisite tenderness over the right sacro-iliac joint. The patient could flex, extend, and rotate the limb when in bed. There was no swelling or tenderness over the joint below Poupart's ligament, nor behind the trochanter major. He did not complain of any pain day or night when in bed, but standing and walking were almost impossible on account of the pain. He complains of no pain in the thigh, knee, or leg.

April 9. Abscess in gluteal region aspirated, but only a few ounces of pus obtained.

30th. Several attempts have been made to evacuate the abscess by aspiration, and, although several ounces of pus have been removed each time, yet the abscess did not seem to be emptied. To-day a free incision was made through the gluteal muscles, and eight or ten ounces of matter evacuated: there seem to have been two abscess cavities, one superficial, the other deep below the gluteal muscles, and in aspirating only the former was reached. For the past week the thigh has gradually become flexed on the pelvis, and cannot now be extended to more than a right angle. There was also a swelling above the crest of the ilium, but no fluctuation could be detected. There was also an impulse communicated to the gluteal abscess when the patient coughed or cried.

May 5. As the opening in the gluteal region showed a tendency to close, a drainage tube was inserted.

12th. Fluctuation was to-day felt in the swelling above the crest of the ilium, and it was opened.

17th. Water injected into the abscess above the crest of the ilium flows out through that made in the gluteal region, passing within the pelvis. Dead bone was detected about the sacro-iliac joint.

19th. Patient to-day removed from the hospital.

In reading the histories of these two cases, it will be noticed that there are certain symptoms common to both, and that in other points they differ. Gradually increasing lameness, pain on pressure over the sacro-iliac synchrondrosis of the diseased side, pain on pressure over the trochanter major, as well as on striking the sole of the foot while the limb is extended, were symptoms common to both cases. In Case I. pain was complained of in the thigh, knee, and leg; while in Case II. the pain was confined to the parts about the diseased joint. In Case I. there was at no time any flexion of the thigh on the pelvis; while in Case II. after a time the thigh became flexed. Case II. was complicated by abscesses, extra- and intra-pelvic; while Case I. presented none. In both cases forced flexion and rotation caused pain; while any motion, short of being carried to the extreme, was free and painless.

Looking at these two cases again, it will be noticed that in some points they resemble disease of the hip-joint: in fact, both patients were sent to the hospital for treatment of disease of that articulation. Pain on pressure over the trochanter major, as well as on striking the sole of the foot with the limb in an extended position, pain at the knee, as in Case I., pain on motion at the hip-joint when the pelvis was not fixed, are commonly looked upon as almost diagnostic of disease of the hip-joint; but free and painless motion at the hip-joint when the pelvis is fixed, as well as the absence of any swelling or tenderness on pressure below Poupart's ligament in front, or behind the trochanter, are conditions not compatible with disease of that articulation.

Disease of the sacro-iliac synchrondrosis is quite rare. I cannot find a case reported in the record-books of the New York Hospital; but three specimens of disease of this joint have ever been presented at the New York Pathological Society, and but two are recorded in the reports of the London Pathological Society. Standard works on surgery have but little to say on this subject; in fact, in many no mention is made of disease of this joint, if we except the last edition of Erichsen's *Surgery*, where a clinical lecture published in the *Lancet* in 1869 is reproduced. Hilton, in his lectures on "Rest and Pain," has treated the subject more thoroughly than any other English writer. Mr. C. Heath has reported some cases in the *British Medical Journal*, January, 1876. In the French medical literature we find disease of this articulation more frequently mentioned: the theses of Girault de Nolhae, in 1840; Joyeaux, 1842; Boissarie,

1862; Delens, 1872; and Brugel, 1877, as well as the surgical works of Nélaton, Follin, and Fano should be mentioned.

The two cases occurring in my own practice, together with fifty-six collected from foreign and domestic medical journals, form the basis of this paper.

The following table shows the age and sex in the fifty-eight cases in which they are noted :—

Age.	Males.	Females.
Under 10 years of age	4	3
Between 10 and 20 years of age	4	3
“ 20 “ 30 “ “	9	9
“ 30 “ 40 “ “	3	4
“ 40 “ 50 “ “	2	3
Adults	7	5
Over 60 years of age	1	0
Age and sex not given	1	
	<hr/> 1	<hr/> 30
		<hr/> 27—58

The youngest was four years of age, the oldest sixty-one. The disease occurred in 25 cases on the right side, in 24 on the left, in two it was double, and in 7 the side was not mentioned.

In considering the subject of disease of the sacro-iliac joint, a distinction should be made between a certain class of cases connected with the puerperal state, described as simple relaxation of the symphysis, and those more profound changes due to direct injury, or secondary to inflammation of the soft parts within the pelvis, although from a careful reading of the histories of some of the puerperal cases, it would appear that what was looked upon as a simple relaxation at a former pregnancy, has been followed, at a later confinement, by serious changes in the articulation. The consideration of cases belonging to the latter class would naturally find a place in a paper of this kind, while those cases of simple relaxation should be excluded.

Cause.—Of the 30 cases occurring among males, in 12 no cause was assigned, five were due to an injury, one to a strain in lifting a heavy weight, four to gonorrhœa, one to rheumatism, five were secondary to Pott’s disease, one case followed measles, and was assigned to “cold.” In some of the cases due to gonorrhœa, a subsequent contraction of the disease was followed by renewed trouble in the sacro-iliac articulation.

Of the 27 cases occurring among females, in 12 no cause was assigned, 11 were connected with the puerperal state, two were due to an injury, one to a strain from carrying a heavy weight, and one followed continued fever. Of the 11 cases dependent on parturition, five were subsequent to a tedious labour, due either to a large child, or a contracted pelvis, in three pyæmic abscesses were found in the joint, one case was secondary to phlegmasia dolens, one to a uterine phlebitis, one to phlegmonous inflam-

mation of the pelvic fascia. In one case the sacro-iliac joint was injured during the delivery of a dead child with forceps; both the patient and physician heard a distinct cracking; this was immediately followed by intense pain and swelling at the left sacro-iliac joint, and later, by both extra- and intra-pelvic abscesses. In one case there was a history of pain and difficulty in walking, subsequent to a previous confinement; this was aggravated by a second pregnancy, and was followed by displacement of the ilium on the affected side. Nine of these eleven cases were accompanied by abscesses. Martin and others have observed disease of the sacro-iliac synchondrosis generally after the birth of large children, or in narrow pelvis. (*Berl. Klin. Woch.*, Sept. 27, 1875.)

The course of the disease may be either acute or chronic. Fagan has reported a case in a child following a fall, and although accompanied by extra- and intra-pelvic abscess, complete recovery took place at the expiration of seven weeks.

The occupations of the patients is given in 21 cases. Six cases occurred among soldiers, four were labourers, one was a carpenter, one a tradesman, one a student, one a cook, one a washerwoman, three are spoken of as "ladies." Hahn has observed three cases among tailors. It would appear from the above that the disease is more common among the labouring class.

Symptoms.—The symptoms of disease of the sacro-iliac synchondrosis may be studied under the following heads: I. Pain; II. Lameness; III. Swelling; IV. Abscess; and Erichsen adds a fifth, alteration in the shape of the limb.

Pain is constantly present, except, perhaps, in the earliest stage of the disease, when the patient bears any weight upon the affected side, or when any motion is communicated to the joint. It may be of two kinds, (a) pain at, or about, the diseased joint, (b) pain referred to a distant part, as down the limb of the affected side, (c) or pain may be complained of in both localities, and, in a few cases, down the limb of the opposite side.

In Case No. II. the pain was confined to the joint, and was always present when any weight was borne upon, or motion communicated to it. When the patient was quiet in bed, he was perfectly comfortable, and could flex, extend, and rotate the thigh of that side, but standing and walking were almost impossible on account of the acute pain. In 14 cases the pain is stated to have been confined to the gluteal region, as "behind the hip," "at the side of the pelvis," "at the sacro-iliac joint," "about the hip but not in it." In Case I., recorded in this paper, no pain was complained of at the affected joint, unless pressure was made directly upon it, but when standing or walking pain was complained of on the outside of the thigh, in the knee and leg. In five cases pain was complained of at the knee and lower portion of the thigh, in two cases in the thigh and leg, in one

case intense pain in the calf was all that was complained of, in five cases in the thigh to the knee-joint. In none of the above cases was there any pain at the diseased joint unless pressure was made upon it. In five cases pain extended from the diseased joint down to the knee and leg, in nine it was at the joint and along the course of the sciatic nerve, in three it was in the joint and down the anterior or inner aspect of the thigh to the knee, in one case there was pain in the joint and over the abdomen, and in one in the joint. Pain in these cases followed the sciatic, obturator, gluteal, and anterior crural nerves. In those cases where the pain was in the course of the anterior crural nerve, there existed intra-pelvic abscesses, and in the case where there was pain over the abdomen, symptoms of disease of the sacro-iliac joint did not appear until later, although they were carefully looked for.

Heath, Guèniot, and Mason, have each reported a case where there was pain in the opposite limb to the one corresponding to the diseased joint. In each of these cases there existed an intra-pelvic abscess with pressure on the sacral plexus (at least in one). Boissarie makes mention of the same symptom.

The pain in sacro-iliac disease is almost always greatly relieved, and often entirely ceases, when the patient assumes the recumbent position. Pain is always present, in cases at all advanced, when the patient is standing, or when any weight is borne by the joint. Gosselin mentions a case, due to gonorrhœa, where the pain was worse at night when the patient was in bed.

Pain was excited by traction in Case I., and Larrey noted the same fact in one of his patients.

There is an entire absence of those starting pains at night, so characteristic of hip-joint disease.

The mode of *accession* is stated in 32 cases: in fourteen it was gradual, and in eighteen sudden. In the former class, vague pains after a fatiguing walk, a sense of weariness, or weakness in the back, obtuse pain about the gluteal region, the feeling of a want of support in the lower part of the body, pain of a rheumatic character, were complained of. In the latter class, the patient may suddenly be seized with acute pain so as to be unable to move, or it may come on after a sudden movement in bed, or immediately after an injury or strain; in a word, it may resemble, in its mode of accession, inflammation of any other joint.

Lameness is a constant symptom; early in the disease it may be slight, or only appearing after a fatiguing walk or sudden exertion, it soon increases, until, in some cases, locomotion is impossible. The gait is unsteady; when the patient is able to walk, the foot is not placed firmly on the ground. There is not, as a rule, any change in the position of the foot. In standing, the whole body is thrown over on the sound limb in order, as much as possible, to relieve the inflamed joint from all pressure.

giving to the affected side of the pelvis a rounded-out appearance; this is often increased by the presence of an abscess under the gluteal muscles.

Tenderness over the sacro-iliac synchondrosis is always present. There may be a diffuse tenderness on pressure over the whole gluteal region, but it gradually increases as you approach the joint, where it will be most marked. In some cases the joint is exquisitely tender, while in others, quite firm pressure is borne with but little complaint; comparison with the sound side will, however, show a difference.

Motion at the hip-joint, on the affected side, is free, smooth, and painless, when the pelvis is fixed, except when carried to extreme flexion and rotation, provided there is an absence of intra-pelvic abscess. In 29 cases the state of the joint in this respect is mentioned, and in all these cases it was good.

In 11 cases the thigh was more or less flexed on the pelvis, and, in a few, adducted. In Case II., at the time of admission, movements at the hip-joint were normal, and there was no flexion; but after a time the thigh gradually became flexed on the abdomen, and shortly after an intra-pelvic abscess was discovered. In nine of these eleven cases the presence of an intra-pelvic abscess is mentioned, and in two no attempt seems to have been made to decide this point. It would seem highly probable, from the above, that flexion of the thigh would strongly indicate the existence of an abscess within the pelvis. The presence of intra-pelvic abscess is noted in 15 cases, but the position of the thigh is not mentioned.

Erichsen, Delens, and others, speak of a change in the apparent length of the limb on the affected side. Mr. Erichsen makes the following statement:—

“Alterations in the shape of the hips and length of the limb are early, and marked from the very commencement of the disease; the limb on the affected side will seem to be longer than on the sound side, due to a tilting forwards, and rotation of the pelvis dependent on swelling of the articulation.” Heath also mentions this apparent lengthening of the limb as one of the prominent symptoms, yet in the three cases which form the subject of his clinical lecture, the state of the limb is mentioned only in one, and in this he states that “*there was no change*,” notwithstanding the fact that these were of some duration, and accompanied by intra- and extra-pelvic abscesses.

In the two patients whose history is given in this paper, there was no change in the length of the limbs. In 15 cases the state of the limb is mentioned, in seven there was *no change*, three were apparently *lengthened*, and five apparently *shortened*. Nélaton states that the limb on the affected side may be apparently lengthened, and that this elongation may be succeeded by apparent shortening. It would therefore seem that this change in the length of the limb is not as constant a symptom as some

writers would lead us to suppose. This change in the apparent length of the limb, when it does exist, is due to alterations taking place in the ligaments, and tissues about the joint, which allow the ilium to be rotated downwards and forwards, in those cases where lengthening is found, and upwards and backwards where there is shortening. The distance from the anterior superior spine of the ilium to the internal malleolus, remains the same. Hahn mentions a case where there was a deviation inwards and backwards, of the right thigh (the diseased side), so that the right knee crossed behind the left, the right ilium was displaced inwards, and the sacro-iliac joint ankylosed. There is no lordosis, nor twisting of the pelvis, so constant a symptom of disease of the hip-joint.

Martin and Collincau mention two cases of disease of the hip-joint, complicated with disease of the sacro-iliac synchondrosis of the affected side. Mr. Holmes seems to look upon it as not an unusual complication.

Vernemil reports a case where there existed hyperæsthesia of the limb of the diseased side. Guèniot, where both limbs were similarly affected; and Hilton, where there was hyperæsthesia of the calf. In the first two cases there were abscesses within the pelvis. Joyeux mentions a case where there was paralysis of motion and sensation in the limb of the diseased side, with extensive collection of matter within the pelvis.

Sayre, in his work on "Orthopedic Surgery," page 328, makes the following statement: "While the inflammatory process is going on, the patient will complain of difficulty in making water, difficulty in having a movement from the bowels, and more or less pain in the bowels; in short, the same class of symptoms referable to the front part of the body of which the patient complains who has Pott's disease of the spine." The distribution of the nerves irritated is not "to the front of the body," and difficulty in making water and difficulty in having a movement from the bowels are *not* mentioned as symptoms of sacro-iliac disease in the 58 cases analyzed, and I can see no anatomical reason for their existence, except when the bladder or rectum is pressed upon by an abscess.

Pain in the bowels is, however, a prominent symptom of Pott's disease in the dorsal region, and difficulty in micturition and defecation is associated with pressure on the cord.

Abscesses were found in 37 cases; in 16 no mention is made on this point; and in 5 none could be found. They may be either extra- or intra-pelvic; may be confined to the joint, or may exist in all these localities.

Abscesses, extra-pelvic.—Of these there were 5 cases: it may be found over the joint, first as an oblong swelling, not movable on the bone, painful upon pressure; later the pus may extend under the gluteal muscles towards the trochanter major, but not reaching it, there is usually a distinct sulcus between the abscess and that bone. The pus may extend backwards so as to cover the posterior surface of the sacrum, or downwards.

In Case II. there were two abscess cavities: one superficial, the other deep under the gluteal muscles, probably communicating through a small opening. Guëniot found a similar condition in one of his cases; and Boissarie, Pano, and Follin refer to the same fact. Muston found a sinus extending from the groin around the hip-joint on to the dorsum of the ilium.

In six cases, at post-mortem examination, the joint was found filled with pus.

Abscesses, intra-pelvic.—Of these there were ten cases. The pus may be between the bone and the iliac fascia; may be in the psoas muscle; may extend backwards so as to cover the anterior face of the sacrum. In case both joints are diseased, it may occupy both psoas muscles. The abscess may discharge in the groin, per rectum, or vaginam.

Abscesses, both extra and intra-pelvic.—Of these there were sixteen cases. They may either communicate through the sacro-sciatic notch, or be distinct, one passing down behind the iliac fascia, or in the psoas muscle, the other being beneath the gluteal muscles. In Case II. a distinct impulse was communicated to the abscess under the gluteal muscles in coughing. Heath observed the same symptom in one of his patients. W. Morrant Baker reports a case in which a gluteal abscess, due to disease of the sacro-iliac articulation, was found to contain blood which came from within the pelvis through the sacro-sciatic notch; the hemorrhage was so profuse that he was compelled to ligate the common iliac. The hemorrhage was supposed to come from a branch of the iliac artery that had ulcerated.

Mustin mentions a case where both lower extremities became enormously oedematous from plugging, first of the iliac vein of the left side, then of the right. At post-mortem examination the iliac vessels were found to be firmly imbedded in the walls of a large abscess; the left vein was filled by a fibrinous clot which entirely obliterated its cavity, and extended down the vein on the opposite side.

In two cases dead bone came away through an abscess which discharged per rectum. Erichsen mentions having met a tympanitic abscess from the passage of flatus into an abscess discharging per rectum.

In some cases crepitus was detected in the joint.

Pathological Anatomy.—The articulation between the sacrum and ilium comes under the class of amphiarthrodial joints. The articulating surfaces are formed of fibro-cartilage lined by a partial synovial membrane; the bones are connected together by external and internal ligaments of great strength. Changes may be found in all these tissues. Erichsen found erosion of the cartilage in a case of six weeks' duration; while in a case of two years' standing there existed degeneration of the cartilage with but slight change in the ligaments and bones. Stoll found the ligaments destroyed, and the articular surface of the bones carious. Hahn found extensive disease of the bones; Weisse profound changes in the joints and

bones. Larrey reports great mobility between the sacrum and ilium, with entire destruction of the joint, and considerable loss of substance from the sacrum and ilium. Sequestra were found in the joint by Hamilton, Verneuil, and Gounoud.

The joint may be affected primarily or secondarily.

In 22 cases in which post-mortem examinations were made, 13 seem to have belonged to the first, and 9 to the second class. Of the latter 5 were secondary to disease of the lumbar vertebrae; in 3 cases the disease was subsequent to a phlegmonous inflammation of the pelvic fascia, and in one case it was due to disease of the ilium.

In three cases metastatic abscesses were found in the joint.

The result is given in 48 cases: 23 were cured, 1 improved, 3 remained in the same condition as when first seen, and 23 died. Of the latter 10 died from exhaustion, 3 from pyæmia, 1 from erysipelas, 1 from diarrhœa, 1 from hemorrhage from the iliac artery, 1 from phthisis, and in 6 no cause is assigned.

Of the 23 who recovered, in 9 there existed abscesses, and in 10 there was no mention made in regard to them.

Treatment.—The purpose of the sacro-iliac joint being to unite and bind together the bones of the pelvis, so as to form a firm basis of support for the body above, and for attachment of the lower extremities below, demands that there should be no motion between the constituent parts of the joint. A glance at its structure shows how perfectly this is accomplished by the strong ligaments within and without the joint. Any relaxation of this bond of union, not to mention any more profound change in the articulation, makes locomotion difficult if not almost impossible. The indications for treatment in disease of this joint are to aid nature in obtaining immobility between the bones forming its boundary. Post-mortem examination of those who had profound disease of this articulation, and who have recovered, shows the bones firmly united together, and all treatment should tend to aid nature in establishing ankylosis. In every case where the treatment is mentioned, it consisted of absolute rest in bed during the more acute stage of the disease. Later, in many cases firm support by some kind of a bandage around the pelvis so as to prevent all movement between the sacrum and ilium. Heath speaks highly of a bandage consisting of two pieces of strong inelastic webbing, starting from either side of a wooden pad placed over the symphysis pubis, one passing to the right, the other to the left, crossing behind, and after surrounding the pelvis, secured again to the pad; this should be drawn as tightly as possible. With some support of this kind patients are able to go about without any inconvenience, while without it locomotion is difficult. Sayre advocates extension by raising the sole of the shoe on the sound side so as to allow the limb on the affected side to swing, making use of it as an extending force. In Case I. extension was tried, but it had to be removed on account

of the great pain it caused. The exquisite pain caused by traction on inflamed tissues in and about the joint, would make this mode of treatment impossible in many cases. Extension in disease of the hip-joint is not to separate the head of the bone from the acetabulum, but to control muscular spasm. The joint under consideration is not acted on directly by muscles as the hip-joint is, and therefore the extension would not be indicated. Ten cases were cured by absolute rest in bed, and later by some kind of a pelvic band; eleven by simple rest; one by rest and a long splint; one by the continuous application of ice for three weeks.

In some cases the use of the actual cautery was beneficial. Tonics and good nourishment are called for in all cases of joint disease. Those cases complicated by abscesses seem to have done best when the pus was early evacuated. In cases reported recently the frequent use of the aspirator seems to have been attended with good result; but, whether free incision or the aspirator is used, the abscess cavity should be kept free from pus.

The question of attempting to remove dead bone, when it can be detected, is viewed differently by different surgeons. Mr. Erichsen states that no operation is admissible. Mr. Bryant states that he has taken a large piece of bone from this joint in a young girl with great benefit, and Sayre says that he has operated often with good result. The fact, that operations for the removal of diseased bone have been performed with benefit, would seem to indicate that they should not be condemned as strongly as they are by Mr. Erichsen. Personally, I have had no experience in operating, but would certainly make the attempt to remove diseased bone when I could satisfy myself of its presence, and I do not see how such a procedure could add to the gravity of the disease.

Diagnosis.—Sacro-iliac disease is most frequently mistaken for hip-joint disease. The diagnosis from the latter may be made by attention to the following points: The pain from sacro-iliac disease is *behind* the hip-joint, or is referred to the thigh, knee, or leg; when the pain is in the knee, the absence of other symptoms of hip disease should direct our attention elsewhere. In the early stage of sacro-iliac disease, and until the formation of intra-pelvic abscesses, in those cases complicated by them, there is *no flexion* of the *thigh* on the *pelvis* and no lordosis, while in hip disease these are *early* and *constant* symptoms. *Motion at the hip-joint* in sacro-iliac disease is *perfectly smooth, free, and painless*, when the pelvis is fixed; in hip-joint disease it is *always* limited, and, in cases at all advanced, *always painful*. In sacro-iliac disease the pelvis does not move with the thigh: in hip-joint disease it does. In sacro-iliac disease there is no pain on pressure, either below Poupart's ligament in front, or behind the trochanter major; in hip-joint disease this is a marked symptom. Pressure on the ilium, at right angles to body, or attempting to rotate this bone, always causes pain in sacro-iliac disease; in hip-joint disease it does not. In sacro-iliac disease there is always tenderness on pressure over the joint;

in uncomplicated hip-joint disease there is none. In hip-joint disease of any duration there are always sudden attacks of pain at night; in sacro-iliac disease they are absent. There is no absolute shortening of the limb on the affected side in sacro-iliac disease; in the more advanced stage of hip-joint disease there is. Intra-pelvic abscesses may be an early accompaniment of sacro-iliac disease; they are only found late in hip-joint disease. Extra-pelvic abscesses in sacro-iliac disease are *behind* the hip-joint, and there is usually a distinct sulcus between the abscess and the trochanter; in hip-joint disease the pus is found either about the joint, or in the thigh, and there is thickening of the tissues about the joint. The attitude assumed by the patient, when standing, in sacro-iliac differs from that in hip-joint disease; in the former the body is thrown on to the sound side, so as to relieve the inflamed joint from all pressure, while in the latter the thigh is flexed, and the pelvis twisted. Locomotion is more painful in sacro-iliac than in hip-joint disease, and greater relief is experienced from absolute rest in bed in the former, than in the latter disease.

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ARTICLE IV.

ACTION OF IRON, COD-LIVER OIL, AND ARSENIC ON THE GLOBULAR RICHNESS OF THE BLOOD. By ELBRIDGE G. CUTLER, M.D., and EDWARD H. BRADFORD, M.D., of Boston.

It is very generally believed that iron is of great benefit in anæmia. The action of the drug is, however, a subject of discussion, and may be said to be little understood.

Trousseau says that iron supplies in chlorosis the principal element which is wanting, but he is uncertain whether the drug acts chemically or merely as a tonic, he is inclined to believe that it has a double action.¹ Headland² does not regard iron as a true tonic, as, in simple debility, unless there be anæmia present the drug is of no service. Bouehardat³ and Wood⁴ seem to regard the action of iron as chemical. Fleury⁵ states that iron increases the number of the red corpuscles. Nothmangel states that this is probable, but not as yet proved.⁶ Andral,⁷ Simon,⁸ and Headland report cases in which the red corpuscles were observed to increase in number under the use of iron. Hayem⁹ investigated the action of iron in anæmia, making use of his modification of the apparatus for counting the corpuscles devised by M. Malassez,¹⁰ and finds that the action of iron in the curable forms of anæmia is more in increasing the colouring power of the corpuscles than their number.

M. Malassez himself, we believe, has made no observations with regard to the action of iron on the blood corpuscles, although his investigations as to other changes in the number of the corpuscles have been very careful and thorough. Malassez's method of counting blood corpuscles and M. Hayem's modification are both so well known that no description is necessary. The accuracy of these methods has been abundantly demonstrated.

The following are the results of a few observations made as to the action of iron upon the number of corpuscles of the blood. They were made with great care, the method of M. Malassez being employed.

A. *Action of Iron on Healthy Subjects.*

CASE I.—Healthy male, aged 30 years. Globular richness—*i. e.* number of globules found in the cubic millimetre—of blood from prick in the finger.

¹ Trousseau, *Traité de Thérapeutique*: article Fer.

² *Action of Medicines*, 4th ed. pp. 164 and 166.

³ *Manuel de Matière Médicale*, 3me edition.

⁴ *Therap. Mat. Med. and Toxic.*, Phila., 1874, p. 77.

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⁶ *Handbuch der Arzneimittellehre*, Berlin, 1874.

⁷ Quoted by Waring, *Pract. Therap.*, 2d Amer. ed., p. 265.

⁸ *Ibid.*

⁹ *Gaz. Hebd.*, Dec. 1. 1876, and in subsequent articles.

¹⁰ Described in the *Archives of Phys.*, 1873.

Red corpuscles	3,663,309
White "	4,577
Ratio of white to red	1 to 800

Ferrum redactum (.25 gramme) was taken three times a day for eight days, and the blood again counted.

Globular richness, red	3,588,100
" " white	4,942
Ratio	1 to 725

Tinct. ferri chloridi, 1.23 c. c. (m xx), was then given ter in die for a week, when examination showed—

Red corpuscles	3,439,160
White "	4,062
Ratio	1 to 937

Rabuteau's Dragées of the protochloride of iron (25 milligrammes) were then given three times a day for a week, when the count gave—

Red corpuscles	3,617,888
White "	4,062
Ratio	1 to 890

No particular effect of iron was noticed, except blackening of the faeces. The iron was then discontinued, and six days later it was found that the

Red corpuscles numbered	3,804,700
White " "	4,062
Ratio	1 to 936

There was, therefore, in this case no increase of the red corpuscles while iron was given; there was a slight decrease under ferrum redactum and tinct. ferri chloridi (224,000 in two weeks), and a rise while the protochloride of iron was used (178,000 in one week). The increase in the globular richness after discontinuing the iron was marked (nearly 200,000 in one week). The white corpuscles remained about the same throughout.

CASE II.—Healthy adult male (39 years). Globular richness of blood from finger was—

Red corpuscles	4,400,000
White not recorded.	

Ferrum redactum (26 milligrammes) was taken three times a day for one week.

Red corpuscles then numbered	4,390,140
White " " "	4,785
Ratio	1 to 917

Tinct. ferri chloridi, 1.23 c. c., taken three times a day, gave in a week a count of—

Red corpuscles	4,115,100
White "	5,075
Ratio	1 to 810

Rabuteau's Dragées of the protochloride of iron (25 milligrammes), three times a day, gave in one week a globular richness of—

Red corpuscles	4,046,950
White "	4,292
Ratio	1 to 942

No more iron was taken for a week, and the count then showed—

Red corpuscles	4,087,550
White "	7,975
Ratio	1 to 512

In this case, also, there was no increase while iron was taken; there was a decrease during the administration of tinct. ferri chloridi, and also

of the protochloride of iron (340,000 in two weeks). There was no marked increase after the cessation of the iron.

The only conclusion from these two cases is, that no increase in the globular richness can be attributed to the use of iron. The variations which occurred were not constant in both cases, and were not greater than the variations from week to week, which we have observed to occur physiologically.¹

It cannot, therefore, be inferred that the drug had any effect upon the number of the corpuscles; it is certain that there was no marked effect.

B. *Action of Iron on Unhealthy Subjects.*

Iron given to a system in a pathological state may be supposed to act differently. The following are the results of our investigations in cases of anæmia. The examinations were all made at the same time of day, and though the patients (taken from an out-door clinic) were not under complete supervision, inquiries were carefully made, and as far as possible any change in occupation was ascertained. In all cases where we considered there was any doubt as to the administration of the drug, or where there was a probability of other causes than the medicine affecting a change in the condition of the patient, the cases were not reported. The examinations were made in each case by the same observer, using the same instruments.

CASE I.—Female, aged 23, servant; has had in the last seven years a few attacks, perhaps epileptic, perhaps hysterical; has worked hard; an "attack" a few days previous; complains of debility, headache; was some time ago obliged from a loss of strength to leave off work. Menses regular. Quite pale, no emaciation.

Globular richness, blood from finger.

Red	.	.	.	.	.	.	.	2,204,308
White	.	.	.	.	.	.	.	3,046
Ratio	.	.	.	.	.	.	.	1 to 723

Tinct. ferri chloridi (.61 c. c. three times a day) was given. Seven days later (medicine reported as well borne) an examination of blood showed—

Red corpuscles	.	.	.	.	.	.	.	2,708,000
White "	.	.	.	.	.	.	.	4,400
Ratio	.	.	.	.	.	.	.	1 to 615

Medicine continued. One week later the count gave a globular richness

Of the red	.	.	.	.	.	.	.	2,935,472
White not counted.								

Patient feels improved and is anxious to resume work. Did not appear again. There was an increase of 731,164 red corpuscles in two weeks.

CASE II.—Girl 17 years old. Bellows murmur at the base of the neck; no heart murmur; occasional weakness and dizziness.

¹ The variations observed may also include errors incident to this method of enumeration. The limit of error has been calculated by M. Malassez to be 30,000 red corpuscles in a cubic millimetre of blood. By repeated successive examination of the same blood with the same instrument, we have satisfied ourselves that the limit of error does not exceed and is probably less than this number.

Red corpuscles numbered	. . . . .	1,929,660
White " " "	. . . . .	2,900
Ratio	. . . . .	1 to 665

The red corpuscles were pale, and averaged 6μ in diameter.

Tinct. ferri chloridi, .61 c. c. (℥ x), was given three times a day for a week. Patient had then a little more colour in face, and reports feeling a little better.

Red corpuscles found to number	. . . . .	2,227,200
White not accurately counted.		

An increase of 1,021,960 red corpuscles occurred in two weeks.

CASE III.—Girl 16 years old. Pallor, poor appetite, loud bruit de diable in neck on both sides, none over heart, menses regular. The

Red corpuscles numbered	. . . . .	2,389,600
White " " "	. . . . .	2,900
Ratio	. . . . .	1 to 821

The corpuscles were very pale; the greater number 5μ in diameter, a few 10μ .

Tinct. ferri chloridi, .61 c. c., given three times a day for a week. Patient then reported herself feeling better, more colour in face. Examination of the blood then showed—

Red corpuscles	. . . . .	2,885,500
White not counted.		

Tinct. ferri chloridi continued in the same quantity, and in eight days the patient again presented herself, having been out of medicine for one day. The count showed—

Red corpuscles	. . . . .	2,537,500
White not taken.		

Red corpuscles were small, averaging 5μ in diameter. An increase of 147,900 occurred, therefore, in two weeks.

CASE IV.—Girl 17 years old, very pale, no colour in lips or conjunctivæ, loud bellows murmur over aortic and pulmonic valves, pain in left side, menstrual flow diminished. Examination of the blood showed—

Red corpuscles	. . . . .	2,172,100
White " " "	. . . . .	2,900
Ratio	. . . . .	1 to 749

Red corpuscles quite small.

Tinct. ferri chloridi ordered, .92 c. c. four times a day.

Presented herself a fortnight later, had had a severe cold for a week in the mean time. Symptoms otherwise about the same.

Red corpuscles	. . . . .	2,551,900
White " " "	. . . . .	8,700
Ratio	. . . . .	1 to 293

Patient seen a month later, had left off medicine, as she felt well enough. Blood not examined.

An increase of 382,800 red corpuscles occurred in this case in two weeks.

CASE V.—Girl aged 20; claims to have been always delicate; figure slight, quite pale; complains of loss of appetite and strength, but is able to work. Had typhoid fever a few months previous, but made a good recovery. At work as a compositor.

Red corpuscles found to number	. . . . .	1,408,160
White not counted.		

Tinct. ferri chloridi, .61 c. c., given three times a day. Patient to remain at work. A week later patient reported.

Red corpuscles numbered	. . . . .	2,932,764
White " " "	. . . . .	4,739
Ratio	. . . . .	1 to 618

There had been an increase of 1,524,604 red corpuscles in one week.

CASE VI.—Girl 18 years old: rather pale, no particular symptoms; box maker by occupation. Examination of blood (at 11 A. M.) showed a globular richness of

Red corpuscles	. . . . .	2,453,448
White "	. . . . .	6,416
Ratio	. . . . .	1 to 332

Tinct. ferri chloridi, .61 c. c., given three times a day. One week later, at 5 P. M. (meal having been taken at noon), an examination of the blood showed—

Red corpuscles	. . . . .	2,560,000
White	not counted.	

As the second count was made in the afternoon, after a day's work and during fasting, at a time when it has been proved there is a decrease in the number of the globules, it is probable that the globular richness at 5 P. M. was lower than at 11 A. M. The actual increase in the number of the red corpuscles was 106,552 in one week. If the second count had been made at 11 A. M., it is probable that a greater increase would have been observed.

CASE VII.—Woman 88 years old: weak, with a poor appetite.

The red corpuscles numbered	. . . . .	2,499,800
" white "	. . . . .	5,975
Ratio	. . . . .	1 to 492

Tinct. ferri chloridi, .61 c. c., given three times a day. One week later patient considered herself improved, appearance the same, suffered in the past five days from subacute bronchitis, with muco-purulent expectoration. The blood count showed—

The red corpuscles	. . . . .	3,085,600
" white "	. . . . .	10,512
Ratio	. . . . .	1 to 293

CASE VIII.¹—Woman aged 26: pallor, complained of general debility. Blood taken from the finger counted.

Globular richness, red corpuscles	. . . . .	2,877,624
" " white "	. . . . .	4,066
Ratio	. . . . .	1 to 584

Tinct. ferri chloridi, .61 c. c., was given ter in die. Thirteen days afterwards the count gave—

Red corpuscles	. . . . .	2,683,628
White	not counted.	

The above cases were not selected ones, but show the effect of iron on all the cases of anæmia under observation. In no case did the number of the red corpuscles diminish or remain the same.

The effect of iron in anæmia is well shown in a case mentioned in the *Gazette des Hôpitaux*, Jan. 26, 1876. On the day of entrance, Dec. 4, the patient's blood showed—

Red corpuscles	2,919,000
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Rabuteau's Dragées of the protoxide of iron, two daily (containing 25 milligrammes), were taken.

Dec. 7, the red corpuscles numbered	. . . . .	3,486,000
" 12, " " "	. . . . .	3,696,000
" 24, " " "	. . . . .	4,578,000

There had been an increase of 1,659,000 red corpuscles in twenty days, or 82,950 a day.

¹ Though in this case there was an increase in the number of the corpuscles, during thirteen days of treatment, the evidence as to the effect of iron is not so strong, as the patient discontinued work for four days, and the diminution of the anæmia may be due to this.

The *conclusion* to be drawn from these observations is that—

In health iron causes no increase in the number of the red corpuscles; but in the pathological state called *anæmia* there is an increase in the number of the red corpuscles under its use.

Cod-liver Oil.—Messrs. Thompson and Campbell (*Schmidt's Jahrbücher*, 1855, vol. 85, p. 8) found an increase of the red corpuscles after treatment with cod-liver oil and oil of coco. Olive oil and oil of sweet almonds did not bring about the same results.

We have attempted to verify these results by examining the blood of a healthy person who took cod-liver oil, and also the blood of persons in impaired health who made use of the medicine.

A. Action of Cod-liver Oil on Healthy Subjects.

CASE I.—Male adult. Blood from finger showed before exhibition of the oil a globular richness of—

Red corpuscles	.	.	.	.	.	3,317,600
White	"	.	.	.	.	3,987
Ratio	.	.	.	.	1 white to 837 red.	

Oleum morrhuae, 7.50 c. c., given three times a day. A fortnight later an examination showed—

Red corpuscles	.	.	.	.	.	3,888,900
White	"	.	.	.	.	4,168
Ratio	.	.	.	.	1 white to 932 red.	

The oil was continued, and a week later it was found that the—

Red corpuscles were	.	.	.	.	.	4,466,000
White	"	"	.	.	.	4,350
Ratio	.	.	.	.	.	1 to 1,026

The oil was discontinued. There had been a steady *increase* of the red corpuscles, and a slight *increase* of the white in three weeks, amounting to 1,148,400 red corpuscles, and 363 white. The increase in the red was proportionally greater than in the white, as the different ratios show.

Eight days after ceasing the use of the cod-liver oil, the blood of the same individual had a globular richness of—

Red corpuscles	.	.	.	.	.	3,435,000
White	"	.	.	.	.	4,800
Ratio	.	.	.	.	.	1 to 715

That is a marked *decrease* of the red.

Cod-liver oil was then resumed the next day (18.5 c. c. ter in die). At the end of ten days an examination showed—

Red corpuscles	.	.	.	.	.	4,219,500
White	"	.	.	.	.	6,452
Ratio	.	.	.	.	.	1 to 653

Five days later, the oil having been continued, an examination showed a continued increase in the globular richness.

The red corpuscles were	.	.	.	.	.	4,439,900
" white	"	"	.	.	.	6,525
Ratio	.	.	.	.	.	1 to 680

There had been in a fortnight again an *increase* of over 1,000,000 red corpuscles in the cubic millimeter of blood, and of over 1500 white.

The oil was discontinued. An examination three weeks later showed a marked *decrease* of the corpuscles.

Red corpuscles	3,607,600
White "	2,537
Ratio	1 to 1,027

These figures show satisfactorily that in this case there was an *increase* in the globular richness under the exhibition of oleum morrhue.

B. *Action of Cod-liver Oil on Persons not in Health.*

CASE I.—Girl 21 years old, tailoress. Extreme pallor, cough, asthenia, amenorrhoea, night sweats. Physical signs not marked. Rude respiration at apex of right lung, no rales.

Red corpuscles	2,031,896
White "	4,400
Ratio	1 to 462

Cod-liver oil and whiskey (3.70 c. c. each) three times a day were given for ten days. They were tolerably well borne. Then the count was—

Red corpuscles	2,328,880
White "	4,385
Ratio	1 to 533

Whiskey omitted. Oil continued alone for a week in amount of 7.40 c. c. ter in die. The count then was—

Red corpuscles	2,098,700
White "	6,431
Ratio	1 to 326

The oil caused some nausea, and the dose was diminished to 3.70 c. c. ter in die. A fortnight later the count was—

Red corpuscles	2,448,032
White "	10,864
Ratio	1 to 226

The patient felt no better; the appearance had not improved. A week later she was confined to her bed.

There had not been a progressive increase of the globular richness under the use of the oil. There had, however, been an increase during the month of 400,000 red, and 6000 white corpuscles. It is, of course, impossible to state whether in this case the increase was due directly to the cod-liver oil or to the abatement of some pathological process which occurred during the time.

CASE II.—Girl 18 years old. Early stage of catarrhal pneumonia—bronchial respiration at the right apex—bronchial expiration at left apex. Pallor, emaciation, cough. No night sweats.

The red corpuscles were	2,572,600
" white " "	4,332
Ratio	1 to 593

Ol. morrhue, 7.40 c. c. ter in die, given for a week, then diminished to 3.70 c. c. ter in die, as it was not well borne. At the end of another week (*i. e.* a fortnight after the first use of the medicine) an examination showed—

The red corpuscles to be	2,312,632
" white " "	3,385
Ratio	1 to 683

The oil was continued, and a week later the count showed—

The red corpuscles to be	2,019,776
" white " "	2,708
Ratio	1 to 745

A continued decrease during the use of the cod-liver oil of 500,000 red corpuscles and nearly 2000 white in the course of three weeks. There had been no apparent increase in the severity of the symptoms, but the medicine was not well borne.

CASE III.—Girl between 20 and 25 years old; pale, weak, slight cough. The blood count showed—

Red corpuscles	. . . . .	3,204,500
White "	. . . . .	2,175
Ratio	. . . . .	1 to 1,473

Oleum morrhuae, 7.35 c. c., given ter in die for a week, when the patient reports herself as feeling somewhat better; slight improvement in appearance, cough nearly gone. The blood count showed—

Red corpuscles	. . . . .	3,735,200
White "	. . . . .	5,800
Ratio	. . . . .	1 to 642

An increase of 500,000 red corpuscles and 3000 white in a week under the use of the medicine.

CASE IV.—Girl 19 years old. Slender figure. Slight cough, weakness. An examination of the blood showed a globular richness of—

Red corpuscles	. . . . .	2,406,606
White "	. . . . .	5,416
Ratio	. . . . .	1 to 444

Oleum morrhuae, 3.70 c. c., given ter in die. Medicine tolerably well borne. An examination one week later showed the

Red corpuscles to be	. . . . .	2,492,326
White corpuscles not taken.		

An increase therefore of 85,720.

Conclusions.—In the healthy subject cod-liver oil caused an *increase* in the number of the red corpuscles and a slight *increase* in the white.

In certain pathological conditions this seems to be also the case if the medicine is well borne. If, however, the morbid process is active, and the appetite is disturbed, the medicine does not appear to check the consequent anæmia.

The following observations show the result of our investigations of the effect of *Fowler's Solution* upon the blood.

A. Action of *Liquor Potassæ Arsenitis* on Healthy Subjects.

CASE I.—The blood from the finger of an adult male had a globular richness of

Red corpuscles	. . . . .	3,978,800
White "	. . . . .	4,712
Ratio	. . . . .	1 to 844

Liq. potass. arsenitis, .30 c. c., was taken ter in die for a fortnight; the blood then showed a globular richness of—

Red corpuscles	. . . . .	3,462,600
White "	. . . . .	3,443
Ratio	. . . . .	1 to 1,000

The medicine was continued, and a week later an examination of the blood showed—

Red corpuscles	. . . . .	3,183,040
White "	. . . . .	1,377
Ratio	. . . . .	1 to 2,310

A week later, the medicine being taken still, the count was—

Red corpuscles	. . . . .	2,888,400
White "	. . . . .	1,087
Ratio	. . . . .	1 to 2,800

The arsenic was discontinued; it had caused a metallic taste and slight disturbance of digestion.

After a week the blood was examined again, the count showed an increase of the red corpuscles as follows:—

Red corpuscles	. . . . .	3,242,200
White	not recorded.	

A week later (the medicine not being taken) the count was—

Red corpuscles	. . . . .	3,219,000
White	“	2,170
Ratio	. . . . .	1 to 1,483

And after another week—

Red corpuscles	. . . . .	4,028,100
White	“	5,437
Ratio	. . . . .	1 to 740

There was, therefore, in four weeks, during the administration of arsenic, a *diminution* of 1,090,200 red corpuscles and 3625 white corpuscles in the cubic millimeter of blood. The diminution in the white was proportionately greater than that of the red. In the three weeks when the arsenic was discontinued, there was an increase in the number of the corpuscles over 1,000,000 red and 4000 white.

At the end of this time the arsenic was again given in the same way, and ten days later the blood was examined again. The count was—

Red corpuscles	. . . . .	3,891,800
White	“	2,537
Ratio	. . . . .	1 to 1,534

Four days later (the drug being continued) the count was—

Red corpuscles	. . . . .	2,872,740
White	“	1,087
Ratio	. . . . .	1 to 2,734

A *decrease* of over 1,000,000 red corpuscles and of 4000 white, the decrease of the white being greater in proportion than that of the red.

CASE II.—Healthy male adult. Blood from finger gave a globular richness of—

Red corpuscles	. . . . .	3,696,400
White	“	4,365
Ratio	. . . . .	1 to 859

Liq. potassæ arsenitis, .30 c. c., was given *ter in die*, causing at first metallic taste and slight gastric disturbance. In nine days the count was—

Red corpuscles	. . . . .	3,485,196
White	“	1,354
Ratio	. . . . .	1 to 2,570

Five days later the count was—

Red corpuscles	. . . . .	3,303,706
White	“	3,046
Ratio	. . . . .	1 to 1,190

Eight days later—

Red corpuscles	. . . . .	2,962,552
White	“	2,708
Ratio	. . . . .	1 to 1,090

Arsenic was discontinued Eight days later the count was—

Red corpuscles	. . . . .	2,967,968
White	“	4,739
Ratio	. . . . .	1 to 626

Twenty days later the count was—

Red corpuscles	. . . . .	3,241,476
White	“	6,193
Ratio	. . . . .	1 to 523

Twelve days later the count was—

Red corpuscles	. . . . .	3,374,168
White "	. . . . .	3,723
Ratio	. . . . .	1 to 900

Liquor potassæ arsenitis, .61 c. c., was then taken again ter in die, and nine days later the count showed—

Red corpuscles	. . . . .	2,710,708
White "	. . . . .	3,375
Ratio	. . . . .	1 to 803

The medicine was stopped. A month after it was discontinued, the

Red corpuscles were	. . . . .	3,311,984
White " "	. . . . .	4,737
Ratio	. . . . .	1 to 690

In this case also there was a marked *decrease* of the corpuscles, both red and white, under the use of arsenic (733,848 red, 1600 white in twenty-two days), followed by an *increase* after the drug was stopped (400,000 red corpuscles, and 2000 white in five weeks); and a second *decrease* when the medicine was again used (600,000 red in nine days. The decrease in the white was slight), and again an *increase* after the medicine was discontinued.

B. Action of *Liquor Potassæ Arsenitis* on Unhealthy Subjects.

CASE I.—Girl, 16 years 5 months old; anæmic murmur in the veins of the neck, cephalalgia, fair appetite, no menstrual disturbance; weak. The count gave—

Red corpuscles	. . . . .	2,668,000
White "	. . . . .	4,350
Ratio	. . . . .	1 to 613

Liquor potassæ arsenitis was given, .30 c. c. ter in die. A week later the patient presented the same symptoms. The count gave—

Red corpuscles	. . . . .	3,140,700
White "	. . . . .	10,440
Ratio	. . . . .	1 to 300

The patient did not reappear. There had been an increase of 500,000 red corpuscles in the cubic millimeter of blood, and of 6000 white. The reverse of what was seen in the previous healthy subjects.

CASE II.—A man 32 years old; cabinet maker; for several months had been very anæmic with no assignable cause. Lately had suffered pain in the cardiac region, also across the abdomen and in the right hypochondrium. The liver and spleen were of normal size, there was nothing abnormal detected in the urine, the retinae on ophthalmoscopic examination were simply pale, there was an anæmic heart murmur at the base; appetite and digestion fair, bowels regular. There was great pallor, conjunctivæ had a faint yellowish tinge, the prolabia were excessively pale, nearly colourless. There was dyspnoea on exertion, and disinclination to take exercise. He could not work. The blood count gave—

Red corpuscles	. . . . .	870,000
White "	. . . . .	2,392
Ratio	. . . . .	1 to 363

The patient was given small doses of iron rather irregularly for a fortnight; the symptoms remaining the same, no change in the appearance. He then received for four days .60 c. c. of liquor potassæ arsenitis. The count at this time gave—

Red corpuscles	. . . . .	1,249,900
White "	. . . . .	1,450
Ratio	. . . . .	1 to 862

As this dose had caused diarrhoea and some gastric disturbance, it was diminished to .30 c. c. ter in die. One week later the blood was again examined; in the mean time the diarrhoea had ceased, considerable colour had returned to the lips, and he expressed himself as feeling very well, and was inclined to take exercise, and commenced talking of resuming work.

Red corpuscles	1,754,500
White "	2,900
Ratio	1 to 605

In eighteen days of mixed treatment there had been an increase of the red corpuscles amounting to 379,900, the white on the contrary had diminished 942 in number. During the week that liquor potass. arsenitis was given alone, and so as not to disturb the bowels and stomach, there was an increase of over 500,000 in the number of the red corpuscles and an increase of the white amounting to 1450.

CASE III.—Man 27 years old. Leucocythæmia. The case has been under observation for two years, and has been reported up to March, 1877, by Dr. F. G. Morrill in the *Boston Med. and Surg. Journal*. Through the kindness of Drs. Lyman, Edes and Draper of the Boston City Hospital, where the patient has been since April, 1877, the arsenic treatment has been adopted, and we have been allowed to examine the blood. The count gave—

Red corpuscles	3,064,080
White "	1,073,040
Ratio	1 to 2.85

For seven weeks he received .30 c. c. liq. potassæ arsenitis ter in die, for the next three weeks it was increased to .60 c. c. ter in die, when the count was—

Red corpuscles	2,334,500
White "	60,175
Ratio	1 to 38.4

The medicine was continued two and a half weeks longer, when the count was—

Red corpuscles	1,841,500
White "	8,700
Ratio	1 to 211

As the drug was causing disturbance, it was omitted, and iron substituted in dose of .30 c. c. ter in die. Three weeks later the count was—

Red corpuscles	3,375,600
White "	19,937
Ratio	1 to 169

The iron was omitted and potassii iodidum substituted. Four weeks later the count was—

Red corpuscles	2,543,300
White "	621,325
Ratio	1 to 4.4

Liquor potassæ arsenitis, .30 c. c. ter in die, was then given in addition, and five weeks later the count was—

Red corpuscles	3,143,600
White "	84,187
Ratio	1 to 37.4

Conclusions.—Liquor potassæ arsenitis given in health caused a progressive decrease in the number of the red and white corpuscles, that of the latter being most marked.

In simple anaemia, on the contrary, there seems to be an increase at first of both the red and white corpuscles. After a certain point there is a steady diminution of both, however.

In the case of leucocythemia there was a decrease in both the red and white corpuscles, the decrease of the latter being very marked.

ARTICLE V.

A CONTRIBUTION TO THE STUDY OF SUBCONJUNCTIVAL SEROUS CYSTS.

By CHARLES S. BULL, M.D., Surgeon to the New York Eye Infirmary and to Charity Hospital.

THERE are certain forms of cystic tumours, occurring beneath the conjunctiva, chiefly of the eyeball but also of the eyelids, but which occupy comparatively little room in the cavity of the orbit, and hence may be separated from the larger and better known class of orbital cysts. They are somewhat rare, and therefore have attracted but little attention, but they seem to be worthy of a closer examination. In considering the nature of these cysts, we must distinguish two forms: *first*, those in which the space filled by the fluid is a natural cavity, that is, one developed physiologically with the growth of the part; and *second*, those in which the cavity is of new formation, from physiological disturbance or some diseased process.

Virchow has taught us that in the same region cysts that are apparently perfectly analogous may be of very different origin, and are therefore of varying significance.

According to Nélaton, cysts in and under the conjunctiva are developed most often from the layer of tissue next the sclera, their size being very variable, ranging from that of a pea to that of a walnut, and their origin is at the best obscure. These cysts, never occupying much orbital space, always develop forwards, pushing the conjunctiva before them, and hence almost always admit of careful examination with the fingers. We thus gain an insight into the consistence, surface, and mobility of the tumour, and may make an exploratory puncture. Yet notwithstanding the comparative facility of examination, a diagnosis of the kind of tumour is not always easy, for a growth, supposed to be a cyst from its softness and fluctuation, may be accompanied by a solid growth. Moreover, lipomata, as well as encephaloid cancers, very often give a sense of fluctuation under the fingers. Another point of somewhat doubtful significance is the mobility of such a growth. In the beginning, serous cysts are always movable, and this freedom of motion may last some time, even when they are growing rapidly; but generally they contract adhesions either with the conjunctiva or with the periosteum of the orbit, and become more or less firmly fixed.

Paget's division of cysts into simple or barren and compound or proliferous, is a sufficiently good one for our purpose. These subconjunctival cysts are always simple or barren: that is, they contain fluid or unorganized matter. They seem always to be formed by the enlargement and union of the spaces in fibro-cellular and areolar tissues. As the fluid in such a tumour collects and increases and the cavity enlarges, the wall of

partition between a number of such spaces breaks down, until finally we have one large cavity. If the pressure of fluid continues, a point is reached where the cavity gains a perfect wall or lining, and a pure cyst is formed from a pressing together and union of a number of connective tissue trabeculae which separated the original areolar spaces from each other. If such a subconjunctival cyst is highly organized, and we have been fortunate enough to remove it entire, or in greater part, it is found on microscopical examination that the wall of the sac consists of fine fibro-cellular tissue, which may run in a single layer, though more commonly in several. Among these fibres are many nuclei, and the inner surface of the sac is sometimes lined by a single layer of squamous epithelium. In most cases, however, it is very difficult or next to impossible to remove the cyst uninjured owing to its firm adhesions to the surrounding parts.

Sometimes, however, there does not seem to be anything like a cyst wall; but the fluid seems to have been poured out or secreted in the subconjunctival areolar tissue, breaking down the trabeculae, but apparently not exerting enough pressure to bring about a condensation of the connective tissue filaments into a distinct wall. Here the microscope shows no lamination or stratification of the fibres, and of course no epithelial lining. Some nuclei are indeed met with, but no more than might be expected in any fibro-cellular tissue.

These cysts do not all contain a serous fluid, though most of them do. Occasionally one is met with which contains an oily fluid. Mr. Hunter cites a case of an oily encysted tumour which grew between the bony orbit and the upper eyelid of a young gentleman, and its contents he describes as "pure oil, perfectly clear and sweet." Schuh also relates two cases of cysts under the brow, which contained similar oily matter. Whence this oily secretion comes from it is still impossible to say. Whether it is secreted as such, or whether it results from the fatty metamorphosis of the epithelium which lines the wall of the sac, is still an unsolved question.

The causation of these cysts is still but little understood. In looking for a cause in the tissue in which the tumour is met with, the question of the local tendency or disposition comes up, and this tendency of fluid cysts to develop in areolar connective tissue is well marked. Whether heredity comes in as a factor is a matter of doubt in the particular class of cysts under consideration. Though some of them are really congenital, in the narrow sense of the word, yet the number of observed cases is still so small that no statistics can be drawn from them. Hence the question of heredity, as well of the tendency to the development of such cysts, as of the actual growths themselves, must still be regarded as unsettled.

When these cysts have a sac-wall or enveloping membrane, it is sometimes excessively delicate, and resembles a serous membrane on its inner aspect. Pathology seems to show that the cysts with moderately thick

walls, which in some cases attain the thickness and density of the dura mater, generally contain either sebaceous matter alone, or else sebaceous matter and a dirty serous fluid mingled together. Demarquay considers that this latter variety of cysts originates from the conjunctiva, and Walton reports a case in a child of four years, in which the tumour extended deeply into the orbit. (Demarquay, *Tumeurs de l'Orbite*, Paris, 1860, p. 392.) As distinct from this variety, cysts are occasionally found secreting their own contents, which owe their origin to certain canals, the orifices of which have become more or less completely obstructed. Thus simple serous cysts are met with in the eyelids, under the conjunctiva, and along the edge of the tarsal cartilage, where they seldom acquire more than a moderate size, and their removal is effected with little or no difficulty. (Hodgkin, *Med. Chirurg. Trans.*, xv., 1829.) This variety of cysts, however, consisting in abnormal dilatation of a normally existing tube or cavity, from obstruction of its orifice, does not concern our subject.

We meet with these cysts most often among children and young adults. In none of the cases which came under my observation was there any history of injury of the region, nor in fact anything which could be attributed as a cause; thus differing from pure orbital cysts, where there is almost always some history of blow or fall upon the orbit, which we are accustomed to regard as a cause of the development of the cyst.

These fluid cysts occur either at the internal or at the external angle of the eyelids, more often at the latter. Kerst thinks there is some connection between the contents of these tumours and the region where they occur. He cites a case of subconjunctival encysted tumour, which occurred at the side of the lachrymal gland at the external angle of the right upper lid, and which was prolonged somewhat deeply into the orbit. It was spherical or nearly so, the size of a chestnut, and contained a cloudy fluid something like sebaceous or concentrated purulent matter, and a large number of small hairs, resembling cilia. The cyst was removed entire. Kerst thought there was a connection between the nature of the hairs found in cystic tumours and that of hairs of the regions whence these growths spring.

Another place where these cysts occur is that overlying or immediately in front of the lachrymal sac, along the inner angle of the eyelids and side of the nose. These pre-lachrymal cysts had not been mentioned in literature until Verneuil reported three cases to the Société de Chirurgie de Paris, December 27, 1876, which were published in the *Recueil d'Ophthalmologie* for January, 1877. (See *Am. Journ. of Med. Sci.* for April, 1877, p. 549.) They have no direct connection with the lachrymal sac, and their origin is in most cases probably congenital. Their contents strongly resemble olive oil.

Verneuil's first case was in a young man, and was situated in front of the lachrymal sac. It was as large as a cherry, was indolent, irreducible by pressure, and of long standing. On being opened a liquid like olive oil appeared. No injection

of iodine was made; the patient went away and never returned. His *second* case was in a young woman, æt. 19, and was also the size of a cherry. It stood a little higher than the lachrymal sac, and the skin over it was greatly distended and very thin. It dated back to early childhood. Its contents were also oily. The anterior three-fourths of the cyst were excised, but the remainder, being very adherent to the deeper parts, was left *in situ*. The wall was found covered by stratified pavement epithelium. The liquid coagulated, and contained numerous crystals of cholesterine and margaric acid. His *third* case was in a man, æt. 31, was as large as an almond, transparent, and dated from infancy. It was apparently adherent to the peristœum. The cyst was punctured, two or three grammes of oily liquid exuded, and after the cyst was entirely emptied, there was felt a small depression in the bones at the inner angle of the orbit.

The origin of the oily contents is unknown. There are certain cysts of the thyroid body and ovary which have similar contents.

Sichel gives two representations of serous cysts of the conjunctiva in his *Iconographie*. One of them was communicated to him by Sömmerring, and here the cyst was situated very closely to the lower border of the cornea. From the symptoms and results this case, however, more properly belongs to the class of orbital cysts.

Another interesting case is reported by Brière, in the *Année Médicale de Cœn*, II., No. 3.

The patient was a girl, æt. 17, in whom a small tumour had appeared in early childhood at the inner angle of the right eye, just back of the earuncle, and had slowly grown to the size of a walnut. A cyst was diagnosed, opened, and emptied of a clear serous fluid. The wound was then enlarged, and the entire inner surface of the cyst cauterized by a saturated solution of the chloride of zinc. This was repeated several times during a number of weeks. The cavity closed very slowly, and was not entirely healed until five months had elapsed.

The following cases, each of which presented some peculiar features, have been under my own observation during the past few years.

CASE I. *Subconjunctival Serous Cyst*.—Harry B., æt. 4; first seen in January, 1876. The child was sent to me from the country for a growth in the orbit. About five months before, the parents had first noticed a slight swelling at the external canthus of the right eye, and just below the upper orbital margin. This slowly increased in size without causing any pain or disturbance in mobility of the eyeball, until it has reached the size of a flat Lima bean, which projects forward and downward from the orbit. The conjunctiva was pushed before it, was freely movable over it, and there was no increase of bloodvessels crossing it. The tumour could be pushed backward somewhat into the orbit, and with the finger inserted between it and the superior orbital margin, it was found that the growth was adherent to the external and superior wall of the orbit. The tumour was translucent, fluctuating, and movable; and a diagnosis was made of a fluid cyst. An exploratory puncture was made with a small trocar through the most prominent part of the cyst, and about two drachms of a light straw-coloured and perfectly clear fluid evacuated. The opening was then enlarged horizontally, and an attempt made to dissect out the cyst. But there was no distinct cyst wall to seize upon, and the adhesions were found to be so broad and deep that the attempt was given up. A portion of the cyst next the opening was snipped off and laid aside for microscopical examination. A twisted strand of fine suture silk was introduced as a means of drainage, the cavity being first carefully washed out by syringing

with warm water, and the child was left in bed without any bandage. Somewhat violent reaction followed the operation, owing to the attempts made to dissect out the cyst; the conjunctiva became reddened and chemotic, and the lids were hot and swollen. There was a free discharge of pus through the wound on the second day, however, and all unpleasant symptoms then subsided. Pus drained away freely; the cavity gradually closed, and at the end of the fourth week the little patient was discharged cured, without there being any sign left of the previous existence of a tumour. The eyeball was freely movable in all directions.

The portion of cyst which was removed was hardened in potas. bichrom. solution, and then submitted to examination. The ordinary characteristics of the subconjunctival areolar tissue were well marked, but there was no sign of any attempt at the formation of a cyst wall. In places, the connective tissue fibres were somewhat pressed together, so as to give an appearance of greater density, and here and there was an agglomeration of nuclei, but there was no arrangement of laminae in the course of the fibres, and not a trace of any epithelium. There was nothing to point to there having been any connection between the cavity of the cyst and the lachrymal gland, nor was there anything found to suggest dilatation of one or more of the excretory lachrymal canals. It seemed to have been a collection of clear fluid in a formless space under the conjunctiva. The fluid proved to be alkaline, slightly albuminous, and contained a few crystals of cholesterine, but there was not enough of it to determine its specific gravity.

CASE II. Subconjunctival Serous Cyst.—David F., *et.* 5, first seen in April, 1877. A well-developed fair-haired boy, but not very bright. The mother states that at the outer angle of the left eye there has been a small tumour since birth, which increased very slowly in size up to six months ago, since which time it has grown quite rapidly. It is now the size of a large almond, projects decidedly beyond the orbital margin, pushing the conjunctiva and lower lid before it, and is situated apparently in the inferior cul-de-sac, in front of, and to the outside of the eyeball. The lower lid is very prominent over the swelling. The surface of the tumour seems to be pigmented, the conjunctiva is freely movable over it, and the motions of the eye are unimpeded. The tumour is moderately firm, but fluctuating, and can be moved in any direction. On examining the child more closely, there was found a malformation of the left ear. There was a very small and very much deformed concha, the lobe being entirely separated from it, and no external auditory canal. The child always turns the other side of the head to any one speaking, and a watch pressed against the rudimentary concha is not heard, nor are the vibrations of a tuning-fork when held close to that side of the head. When, however, a vibrating fork is placed against the forehead or teeth, the child says he hears the sound on both sides.

A diagnosis of a fluid cyst being made, an attempt was made to remove it entire through a long horizontal incision. But though great care was exercised in making the cut, the cyst had such very thin walls that the pressure of a pair of forceps ruptured it at its most prominent point, and a large quantity of colorless fluid escaped. The swelling almost immediately subsided, and the lower lid resumed almost its normal position, but there seemed to be considerable thickening of the areolar tissue about the cul-de-sac. No drainage silk was used in this case, as I wished to see whether the cyst would refill, but simple cold water dressings and a band-

age. There was no reaction at all, and the bandage was removed on the second day. I saw the child the following week, and there was no apparent change in his appearance, and the hypertrophied condition of the subconjunctival tissue was about the same. Since then, the patient has never returned, and I know nothing further of the case. The serous cyst was probably of the same nature as the previous case, and had no distinct cyst wall, but in regard to its origin it is somewhat different. The cyst here was evidently congenital, was a deformity, and in view of the rudimentary ear of the same side, it might be regarded as a malformation, but of what seems difficult to say. It was probably not connected with the lachrymal gland or its excretory ducts, for it was in the lower cul-de-sac. The left eye itself was perfectly normal in every way.

CASE III. *Subconjunctival Prelachrymal Cyst*.—Maria M., *et.* 50, first seen in February, 1877. The patient had always been in good health, and had had very strong eyes till about two years back, when she caught cold in her eyes, which became violently inflamed. From her description, this was probably conjunctivitis of both eyes, with a subsequent dacryocystitis on the left side. The lower canaliculus on this side had been slit up, and she said that a probe was passed for a long time. About eight months ago she noticed a small swelling which made its appearance at the extreme inner angle of the left eye, just above the caruncle, which, she said, seemed to come down from under the upper lid. This tumour has steadily increased in size, and has pushed the conjunctiva of the upper cul-de-sac before it towards the eyeball, and has also pushed the skin forwards just above the internal tarsal ligament. On examination there is seen in front of, and above the site of the lachrymal sac, a swelling the size of a large walnut, of firm, resilient consistency, with no decided fluctuation, which slips about under the fingers like a marble. The skin is pushed forward over it, but is freely movable, showing that no adhesions exist. The tumour also extends backwards and downwards towards the eye, coming down between the upper lid at its inner angle and the eyeball, pushing the lid away from the globe and the caruncle outwards and downwards. The conjunctiva is freely movable over it. There was still an occasional discharge of pus from the sac. Pressure upon the tumour, however, did not cause this, and there was a sensation felt under the finger which was totally distinct from that felt in pressing upon a lachrymal sac filled with pus. A diagnosis of fluid cyst was made, and an exploratory puncture with a small trocar gave exit to about a drachm of slightly turbid, glairy fluid. The trocar was introduced posteriorly through the conjunctival cul-de-sac. The swelling immediately diminished very much in size, but still not entirely, and a closer examination showed very decided thickening of the walls of the cavity. It was then determined to dissect out the sac-wall if possible, and to this end a vertical incision was made externally through the skin, reaching from the superior orbital margin down to the internal tarsal ligament. The skin with the thin layer of subcutaneous adipose tissue was carefully dissected away, and the fibres of the orbicular muscle were then seen, somewhat thinned and separated by spaces, and very pale. Underneath this was a yellowish-gray glistening appearance, which could be easily separated and dissected up from the surrounding tissues. By working carefully with the handle of a scalpel and blunt scissors, the cyst wall was finally removed entire after about half an hour's work, and the hole found on its posterior surface where the trocar had entered. Here the sac-wall lay immediately beneath the conjunctiva. On

examining the cavity from which the cyst was removed, it was found to lie, as suspected, directly in front of, and to the outside of the lachrymal sac, from which it was only separated by a little adipose tissue. The cavity was limited below by the upper margin of the internal palpebral ligament, but above it reached nearly to the superior orbital margin. There was considerable hemorrhage during the operation, and the oozing continued until the cavity had been stuffed with small bits of sponge. A probe was introduced into the lower canaliculus and passed readily to the bottom of the nasal duct, proving that there was no obstruction, and that the original operation for cure of the stricture had been effectual. Six hours later, the pieces of sponge were removed and the cavity well washed out with water. A strand of coarse suture silk was then introduced for drainage purposes, and cold applications made. There was very little reaction, the cavity began to granulate from the bottom, the discharge of pus was moderate, and on the twenty-fourth day the patient was discharged with the wound entirely closed, very little prominence of the skin over the seat of the tumour, and not a very marked linear cicatrix.

The fluid was albuminous, neutral in reaction, and contained cholesterine crystals.

The cyst presented a smooth, glistening appearance on its internal surface, but was rough and uneven on its exterior, owing to the divided and broken adhesions. Its wall was about half a line in thickness. After hardening in a solution of potassium bichromate, and then in alcohol, sections were made of the cyst wall and placed under the microscope. It proved to be composed entirely of well-developed connective-tissue fibres, densely packed together, with well-marked nuclei, and here and there some free nuclei. There was no distinct lamination, but the fibres appeared to run parallel to one another, and as closely as is met with in the sheaths of tendons. The inner surface was covered by a single layer of pavement-epithelial cells, each with a distinct nucleus. The outer edge of the sections showed where the looser areolar tissue, forming the adhesions, had been broken away by the process of dissection.

The origin of this cyst it seems impossible to determine. I could see no connection between its development and the dacryocystitis which had existed for some time. There was no history of any injury, such as occasionally gives rise to orbital serous cysts, and there is no bursa in this region which might develop into a cyst from hypersecretion of its contents.

CASE IV. *Subconjunctival Cyst of the Caruncle*.—Patrick M., *et.* 12, first seen in April, 1874. The patient is a well-developed Irish boy, who had never had any trouble with his eyes, except this tumour, until within a few weeks. The parents stated that in early infancy a small swelling had appeared at the inner corner of the right eye, and had very slowly increased in size, but had never occasioned any trouble, nor had the eye ever been red or inflamed. About two weeks before I saw him, the child was attacked by an ordinary catarrhal conjunctivitis, for which he was brought to the infirmary. Since then, the mother said, the swelling had grown more rapidly, had become red, and was somewhat painful. On examination I found a small, red, fluctuating tumour, about the size of a large bean, occupying the site of the caruncle of the right eye, freely movable and sensitive to the touch. The pain was probably due to the pressure upon the inflamed conjunctiva. Supposing this to be a colloid cyst of the caruncle, which are not uncommon in this situation, the cyst was punctured with a broad needle. The moment the needle was with-

drawn, a small quantity of clear serous fluid was poured out and the tumour collapsed to less than the size of the normal caruncle. The conjunctivitis was then treated in the ordinary way by weak solutions of alum, but on the fourth day the cyst was as large as ever. The contents were again evacuated as before, but the cyst again refilled, and on the ninth day, after puncturing it, the opening was enlarged, and the inner surface of the sac cauterized by a fine pencil of nitrate of silver. This caused suppuration of the sac, which soon, however, ceased, the cyst contracted and eventually disappeared almost completely, and gave the appearance of a deeply sunken caruncle, such as we sometimes see after tenotomy of the internal rectus for convergent squint.

CASE V. Serous Cyst of the Caruncle.—Sophie S., *et.* 40, first seen in September, 1876. This patient had never any affection of the eyes until six months ago, when she first noticed a little protuberance of a pearly colour at the internal canthus of the right eye, which slowly increased in size. There was never any pain or redness of the part. When I saw her there was a swelling the size of a bean, situated just in front of the caruncle of the right eye, which pressed forward and downward upon the lower canaliculus and caused considerable epiphora. Having forgotten the occurrence of the previous case, which resembled this very closely, except in the one particular of coming on in adult life, a diagnosis was made of colloid cyst of the caruncle, and the tumour was punctured. Instead of a colloid mass exuding, a clear serous fluid made its appearance, and the swelling collapsed. I then recalled to mind the other case, and was consequently prepared to see this cyst fill up again. To avoid this, the opening was enlarged and the interior of the sac cauterized, as in the preceding case. The result was the same—moderate reaction, suppuration for a few days, then closure and contraction of the cyst wall, and no return.

The development of a serous cyst in the lachrymal caruncle, as exemplified by these two cases, is somewhat singular. Anatomically considered, the caruncle is an aggregation of small hair follicles, held together by connective tissue, with sebaceous glands and fat cells lying between the follicles. Colloid and sebaceous cysts might naturally be expected here, and do occur, and even small fatty tumours are occasionally met with, but I am not aware of any case of serous cyst of the caruncle having been previously reported. From the rapid contraction of the cyst walls, and the deep sinking-in of the remainder of the tumour after final evacuation, it is probable that the original constituents of the caruncle had been absorbed more or less completely and their space occupied by fluid, and this being discharged, nothing remained but an extremely thin outer layer or surrounding membrane, and hence the very small size of the caruncle.

ARTICLE VI.

THE DISTRIBUTION OF NERVES IN THE IRIS. By HENRY F. FORMAD, B.M., M.D., of Philadelphia. (Abstract from an Inaugural Prize Essay, presented to the Medical Faculty of the University of Pennsylvania.)

THE iris is an open field for research; neither its histological structure is settled beyond doubt, nor is the exact *modus operandi* of its movements satisfactorily proven. A large number of distinguished writers on this subject express the most diverse views, as a glance at its literature will show.

Having made a number of microscopical researches on this subject, it is my intention at this time to speak of the nerves only in so far as regards their *mode of distribution* in the iris. In my opinion, all existing descriptions of the nerves of the iris are incorrect, and, indeed, but superficial work has been done in this department.

Passing over the theories of the ancients, who substituted for the function of the nerves of the iris affluxes of "spiritus animalis," etc., or such curiosities as the view of Bartolini¹ in 1643, who considered the ciliary nerves as peculiar ligaments, to which he ascribes the property of contractility and expansibility, which cause the movements of the iris, we meet, as early as in 1727, the admirable paper of Petit.² In this he describes his discovery that by section of the sympathetic at the neck, paralysis of the dilator muscle of the iris resulted, thereby allowing an increased action of the sphincter, causing contraction of the pupil. But the honour of having first described the nerves in the iris proper, must be conceded to Saint Yves,³ of Paris, in 1744, who is not quoted by any writers on this subject. His description of the nerves concerned is by no means less satisfactory than those given by some of the most prominent authors of our day, *e. g.*, in the recent edition (1875) of Henle's large Anatomy.⁴ Saint Yves's description leads me to believe that he really saw nerves in the iris, and the fact, that there existed in his time a few very satisfactory microscopes, is also a support to this opinion. In 1845, M. S. Weber,⁵ of Leipsic, a distinguished anatomist, absolutely denied the existence of nerves in the iris, which were so admirably observed over one hundred years prior. During these one hundred years, the existence of such nerves was also either doubted or overlooked by several other promi-

¹ Cornelliuss Bartholini : Archiatri Danieli Anatome. Lugduni, 1643.

² Petit, M. : Mémoires de l'Académie Royale des Sciences. Paris, 1727.

³ Saint Yves (Surgeon Oculist of the Company of Paris) : A New Treatise on Diseases of the Eyes, containing some new discoveries in the structure of the eye. Transl. from the French by J. Stockton, M.D. London, 1744. See pp. 13, 20, and 36.

⁴ J. Henle : Handbuch der System. Anatomie des Menschen. B. ii. Braunschweig, 1875, p. 663.

⁵ Weber, M. S. : Handbuch der Anatomie des Menschlichen Körpers. Leipzig, 1845. See "Iris."

nent observers, such as Sömmering,¹ Muck,² Doellinger,³ Home,⁴ and others (probably from using material which had undergone cadaveric change or employing imperfect methods); and on the other hand they were claimed as being discovered by Zinn⁵ (1755); but he probably mistook bloodvessels for nerves, as would appear from fig. 1, tab. iv. of his otherwise excellent treatise on the eye. This very old drawing of Zinn, or sometimes a similar one, is used unaltered, even in modern anatomical works, to illustrate the "nerves of the iris and choroidea." Other old authors, as Porterfield⁶ and A. Monro,⁷ describe much more satisfactory observations on the nerves concerned. Schreger,⁸ of Leipsic, considered the shape of the pupil of various animals to be dependent upon the arrangement of the nerves in the iris. Treviranus,⁹ also a prominent observer, is mentioned by some as having first described the nerves of the iris. Two excellent American authors in connection with my subject I may mention: W. C. Wallace,¹⁰ of New York, the first discoverer of the ciliary muscle, and S. M. Gibson,¹¹ of Baltimore.

The older literature is, in general, very interesting; it exposes some of the most important observations, long ago made but since forgotten. But not all of them deserve consideration; the late distinguished anatomist, Friedrich Arnold,¹² of Heidelberg (1832), and several others profess to have seen nerves in the iris of man and smaller creatures with the naked eye, or by a magnifying power of only two and a half diameters. I have convinced myself that it is impossible to recognize nerves in the iris, beyond doubt, with lower magnifying power than fifty or even sometimes five hundred diameters. I admit, however, that Mayer¹³ has seen with

¹ Sömmering, Sam. Th.: *Icones oculi humani*. Trane. ad Moenum, 1804.

² Muck, G.: *De Ganglio Ophthalmico et nervi ciliaribus*. Landshuti, 1815.

³ Doellinger, J.: *Illustratio iconographica fabricæ oculi humani*. Berlin, 1817.

⁴ Home, Ev.: *Philosophical Transactions* of 1822, part i. p. 76. London.

⁵ Zinn, Joh. G.: *Descriptio Anatomica oculi humani, iconibus illustrata*. Cötingen, 1755.

⁶ Porterfield, W.: *A Treatise on the Eye*. Edinburgh, 1759. See *Iris*.

⁷ Monro, A.: *Human Anatomy*. Edinburgh, 1795, p. 100. *Three Treatises, on the Brain, Eye, and Ear*. Edinb., 1797, p. 109.

⁸ Schreger, Ch.: *Versuch einer vergl. Anatomie des Auges des Menschen und der Thiere*. Leipzig, 1810.

⁹ Treviranus, G. R.: *Beiträge zur Anatomie & Physiologie der Sinneswerkzeuge des Menschen & der Thiere, illustrirt*. Bremen, 1828. See vol. i. p. 77.

¹⁰ Wallace, W. C.: *The Structure of the Eye*. New York, 1836.

¹¹ Gibson, J. M.: *On the Anatomy and the Diseases of the Eye*. Baltimore, 1832.

¹² Arnold Friedrich: *Anatomische & Physiologische Untersuchungen über das Auge des Menschen*. Heidelberg, 1832.

¹³ Mayer: *Anatomische Untersuchungen über das Auge des Walfisches, etc.* Bonn, 1852. Of older authors I would further, for a full study of the subject, recommend as very valuable the following:—

C. Kræuse: *Handbuch der menschlichen Anatomie*. Hanover, 1833, vol. i. p. 2d, p. 532.—Valentin, G.: *Ueber den Verlauf & die letzten Endigungen der Nerven*. Nova acta Physico-medica Naturalis Curiosum, 1836. See page 110 and tab. v. fig. 28.—Mandle, L.: *Anatomie Microscopique*. Paris, 1838, vol. i. tab. 42.—Quain, S.: *Elements*

the naked eye these nerves in the whale, which he describes in his excellent paper. Several of the older anatomists advised that no reliance be placed upon the microscope, as it frequently "deceives," and declared an ordinary magnifying lens as sufficient for histological examinations, by which means they discovered or denied the existence of ganglionic cells, etc., in the iris.

Budge¹ has written an excellent monograph on the movements of the iris; there is nothing equal to it even in recent literature. Budge's microscopic examination of the nerves could, however, not have been a satisfactory one, for his method involved the use of strong solutions of caustic potassa, which I have found partly destroys the nerves. The descriptions of these nerves, given by Kölliker² and by Rüdinger,³ I find to be incorrect. Fig. 472 of Kölliker's *Gewebelehre* (l. c.), which is intended to illustrate the distribution of the nerves in the iris, gives an entirely wrong idea; it is the same old drawing Kölliker gave twenty-five years ago,⁴ which we also find reproduced in every edition of Quain's Anatomy. A short but peculiar description of these nerves is given by Dr. A. Metz,⁵ of Cleveland, Ohio; he does not, however, mention his authority.

Hirschfeld,⁶ in conjunction with Robin, dogmatically asserts that "there are but very few nerves in the iris, and that those who pronounce this organ to be richly supplied with nerves are wrong."(!)

Of the recent special text-books and monographs, none contain anything new; the most of them give a description of the nerves of the iris, if any, according to Julius Arnold,⁷ seldom referring to any other author. Indeed, no one treats the subject more exhaustively, in an anatomical point of view, than J. Arnold (1863), and nothing original has been written since.

One of the disputed points in connection with the nerves of the iris, is

of Anatomy. London, 1837. See Iris.—*Pappenheim, S.*: Specielle Gewebelehre des Auges. Breslau, 1842.—*Huschke, E.*: Encyclopædie Anatomique. Paris, 1845, vol. v. p. 651.—*Hyrthl, S.*: Lehrbuch der Anatomie. Prag, 1846. See Iris.—*Brücke*: Anatomische Beschreibung des menschl. Augapfels. Berlin, 1847.—*Beck, K. S.*: Ueber die Verbindung der Sehnerven mit dem Auge und Nasenknoten. Heidelberg, 1847.—*Bochdaleck*: Prager Vierteljahrsschrift für practische Heilkunde, 1850, 7th year, p. 163.—*Kölliker, A.*: Mikroskopische Anatomie. Leipzig, 1852. See Iris. *De Ruiter*: De Actione Belladone in iridi. In *Trajecta ad Rhenum*. Utrecht, 1853, p. 4. See also *Nederlandsch Lancet*, d. iii. p. 435.

¹ J. Budge: Ueber die Bewegung der Iris. Braunschweig, 1855. (It is out of print and impossible to obtain; there exists a copy, among other rare books in this line, in the private library of Prof. Wm. F. Norris, to which I had access through the kindness of its owner.)

² A. Kölliker: Handbuch der Gewebelehre. Leipzig, 1867. See Iris.

³ Rüdinger: Anatomie der Gehirn-Nerven. München, 1868.

⁴ A. Kölliker: Mikroskopische Anatomie. Leipzig, 1852.

⁵ A. Metz: Anatomy and Histology of the Human Eye. Philadelphia, 1868.

⁶ L. Hirschfeld: System nerveux. Paris 1873. See p. 449.

⁷ Julius Arnold: "Ueber die Nerven und das Epithelium der Iris." In *Virchow's Archiv*, 1863, vol. xxvii. p. 315, and plate vii.

the existence or non-existence of ganglia, which Meckel¹ claims to have discovered. Their existence was afterward confirmed by Treviranus,² C. Krause,³ Bochdalek,⁴ Mayer,⁵ and others; J. Arnold⁶ also found "ganglion-like masses" in the iris of the rabbit.

Donders,⁷ who coincides with Sämisch, Schweiger, H. Müller, Liebreich, W. Krause, and Manz, in admitting ganglia of the ciliary muscle, says, that ganglia, probably, also exist in the iris. Quite modern writers, such as Dr. Gradle⁸ (of Chicago) and Dr. Faber⁹ (of Leipsic), declare also, very positively, that ganglia do exist in the iris of man and other animals. Gradle does not claim to have made any researches of his own, nor does he mention on what he bases his statement; and Faber's observations on the nerves were very superficial, and I also strongly suspect that he has mistaken bloodvessels for nerves, in describing the latter, as he used hydrochloric acid, which brings out the vessels very prominently, but is one of the poorest reagents for nerves; I have convinced myself of this fact after many trials, using hydrochloric acid in every degree of dilution.

Opposed to the existence of ganglia in the iris, are Huschke,¹⁰ Budge,¹¹ Kolliker,¹² Rudinger,¹³ and Michel.¹⁴

Describing the nerves of the iris, I coincide with J. Arnold,¹⁵ in general, more or less; but in three very important points I am entirely opposed to him: 1. *in the mode of entrance of the nerves into the iris*; 2, *their mode of distribution in the outer (the ciliary) part of the iris*; and 3, *I deny his "ganglion-like masses."*

For the investigation of the *nerves*, I have heretofore used, satisfactorily only, the irides of Albino rabbits; partly also of the sheep and of the cat, with more or less similar results in all. Human irides (which are supposed to have the same arrangement of nerves as those of the rabbit) I have examined immediately after they were extirpated at the clinic, but they were, probably, not sufficiently healthy, as I got no satisfactory results.

My conclusions I draw from over fifty preparations of nerves of the iris of the rabbit, which I still have in my possession. I have used all the methods and reagents ever suggested for nerves, with more or less

¹ Fr. Meckel: Handbuch der menschl. Anatomie. Halle, 1815. Vol. iv. p. 86.

^{2 3 4 5 6} Loc. cit.

⁷ F. C. Donders: On the Anomalies of Accommodation and Refraction of the Eye. Transl. of Syd. Soc. London, 1864, p. 576.

⁸ H. Gradle: "The Movements and Innervation of the Iris." In the Chicago Journal of Nervous and Mental Diseases, April and July, 1875.

⁹ C. Faber: Der Bau der Iris des Menschen und der Wirbelthiere. Gekrönte Preisschrift. Leipzig, 1876, p. 34.

^{10 11 12 13} Loc. cit.

¹⁴ J. Michel: Die histologische Structur des Iris-stroma. Erlangen, 1875.

¹⁵ Julius Arnold: loc. cit.

similar results. I will not enter upon a consideration of them, but will here only state, that I found best, maceration in a 2 to 5 per cent. solution of acetic acid for 12 to 48 hours, followed by a subsequent immersion in highly dilute (0.1 per cent.) solution of chromic acid for half an hour. For staining, I used Beale's carmine-solution (or haematoxylin staining), and as a preservative, glycerin, with the best results. I would also recommend a slight heating of the preparation during examination under the microscope, as it brings out the nerves often surprisingly well where they were not previously visible. I also found the use of chlorine-water (recommended long ago by Grünhagen, but since forgotten, as no records of its use could be found) for pigmented irides of great service; chlorine-water, bleaching the pigment entirely after maceration for several days, and subsequent maceration in glycerine, does not influence the structure of the iris at all. This method could be used, I think, advantageously in all cases where pigment obscures a tissue. For the examination of the elementary termination of the nerves, I used the usual gold-method.

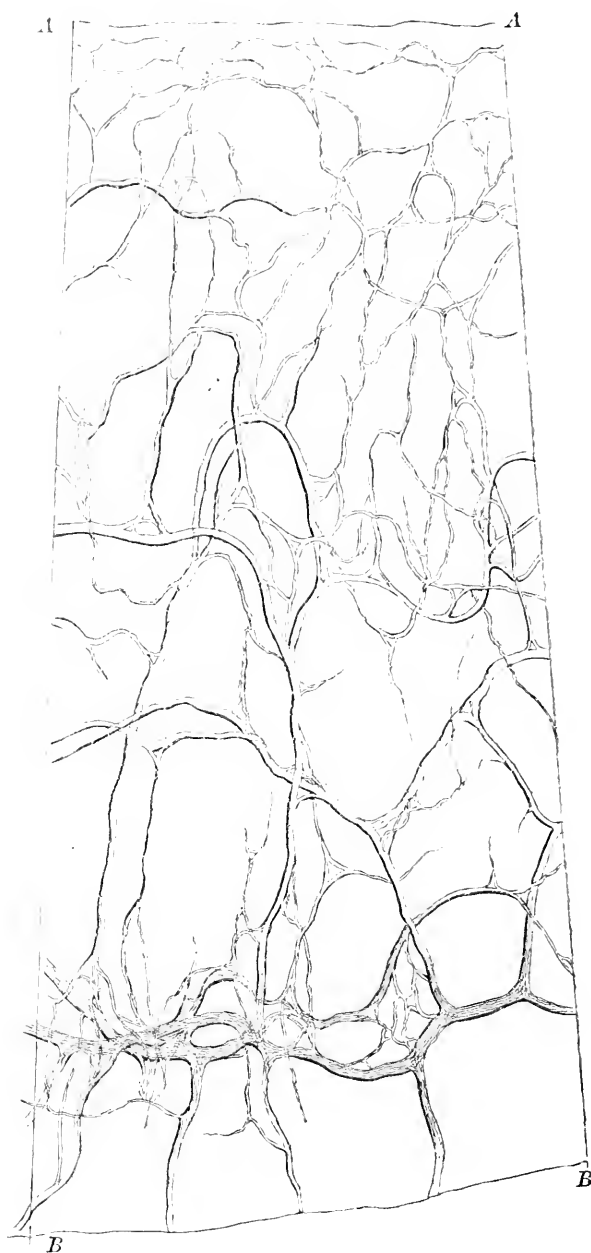
By the above-mentioned method, the nerves acquire such a characteristic, striated appearance, that it is impossible to mistake them. The bloodvessels are also very distinctly seen in the preparations, and are easily distinguished from the nerves, as are also the connective-tissue and muscular fibres, etc.

The nerves do not lie all in one plane, but in different layers of the structure of the iris. Placing the iris on either side, the nerves can all be seen as I have drawn them, some only by constantly moving or altering the focus. Doubtless also more networks of small nerves exist than I have drawn. Most of the larger nerve-trunks lie (the iris being examined from the anterior side) in front of the bloodvessels running usually at some distance from the latter, but often parallel with them.

The wood-cut represents about $\frac{1}{16}$ of the circumference of the iris in its whole breadth; a part being selected where the most peculiar and variously-shaped nerve plexuses occurred.

The distribution of the nerves may be described as follows:—

The nerves enter the iris from the ciliary muscle through its outer peripheral border in comparatively small trunks, and form, if we divide the iris in its breadth into four equal parts or zones, in the first or outer zone, often very near and parallel with the ciliary border, an irregular dense circular plexus of larger nerve-trunks, which goes around the whole circumference of the iris. A second circular plexus which forms more arches, the convexity of which is directed sometimes towards the ciliary and sometimes towards the pupillary border, runs through the second zone. A third circular plexus of the same character as the foregoing, but being more irregular, runs through the third zone. In the fourth zone, which also includes the sphincter, run a fourth and a fifth circular plexus composed of thinner nerve-trunks, but of the same character



The distribution of nerves in about $\frac{1}{16}$ th of the circumference and the whole width of the iris of a rabbit.—A A. Pupillary border. B B. Ciliary border. In the *first* plexus is shown the mode of interchange of the nerve-fibrils of the different nerve-trunks. The networks of the smallest nerves are drawn only in a few places. In my original drawing the tissues are magnified 500 diameters; in the accompanying illustration the drawing is reduced to about $\frac{1}{12}$ th.

as the foregoing; the fifth being in the sphincter itself runs very near the pupillary border. All these five somewhat irregular circular plexuses, being more or less parallel with the ciliary and the pupillary borders, are connected with one another by transverse or radiating nerve-trunks of tolerably large size. Most of these radiating trunks originate in the first circular plexus and go direct to the second; others continue their course isolated, crossing the second and sometimes also the third circular plexus, divide themselves, sometimes dichotomously, or unite with some other nerve-trunk, then form an arch or a loop and finally join one of the plexuses. This is repeated over and over again in an irregular manner all over the iris, so that the formation of arches, and loops, and triangles, may be considered as predominating in the distribution of the larger nerve-trunks. These consist chiefly of medullated nerve-fibres with distinct neurilemmæ and prominent nuclei in the latter. At the decussation and junction of two or three nerve-trunks, there are formed sometimes peculiar figures as represented in the drawing. An intimate interchange of nerve-fibrils of the different nerve-trunks usually takes place at such points. From all larger nerve-trunks which enter into the formation of the circular plexuses, and still more from the convex side of the arches and loops formed by the radiating trunks, smaller nerve-trunks of a mixed elementary character take their departure, which, in a similar way unite to form plexuses; from these still smaller nerve-twigs arise, which freely inosculate one with another, and finally dividing into their primitive fibrils form a *terminal network all over the iris*, which is in intimate connection with all elements of the structure of the iris. No ganglionic cells could be observed in the iris.

I never succeeded in finding any ganglia, but I have frequently seen conglomerations of protoplasm, on and between several nerve-trunks, which probably have been confounded with ganglia, and which have been called also "ganglion-like masses." Some of the stellate connective tissue cells in the iris and neuroglia-cells, especially when surrounded by protoplasm, may also be confounded with ganglia. In connection with this I may mention that, recently Sgm. Mayer¹ declared the nuclei of the sheath of Schwann to be true ganglia. (!)

J. Arnold² failed to see the first circular plexus near the ciliary border, as his description and his drawing show. It is true that this plexus is not visible with equal distinctness in every part of the circumference of the iris, being sometimes somewhat indistinct, but I never missed it in successful preparations of *entirely fresh* irides. *No description of this first plexus has, heretofore, been published.* De Ruiter (loc. cit.), who investigated the iris of the white rabbit ten years prior to J. Arnold,

¹ Sgm. Mayer: "Die peripherische Nerven Zelle und das Sympathische Nerven System." Berlin, 1876.

² Julius Arnold, loc. cit.

describes a plexus of nerves "near the margin of the iris, whence smaller branches take their origin," which could, perhaps, correspond to the first plexus of my description, but, as he considers only one more in the iris, namely a second near the sphincter, it is probable that he saw the second (Arnold's first) circular plexus, which is much more readily observed. Certain it is that De Ruiter's observation is a valuable one, and should have received attention, as it, so far as the mode of entrance of the nerves into the iris is concerned, approaches nearer the truth than any other.

A correct knowledge of the mode of distribution of the nerves may, perhaps, throw some more light on the physiology of the movements of the iris.

I am indebted to Dr. E. O. Shakespeare for much practical advice during the progress of the above observations, which were made in the summer and autumn of 1876, in the Pathological and in the Eye Laboratories of the Medical Department of the University of Pennsylvania.

ARTICLE VII.

A CASE OF OVARIOTOMY DURING SUBACUTE PERITONITIS AND SUPPURATION OF THE CYST FOLLOWING ASPIRATION; WITH REMARKS. By PAUL F. MUNDÉ, M.D., Assistant Surgeon to the New York State Woman's Hospital.

THIS case possesses, as the heading indicates, several features of interest, which lead me to report it, and to which I shall briefly refer after concluding the history of the case.

Isabella McC., 33 years of age, single, of small, slender figure, came to me October 20th, 1875, with an abdominal tumour, which, she stated, had grown within the last six weeks, and which caused her great discomfort. On thorough examination the tumour was declared to be an ovarian cyst proceeding from the left ovary, for I could distinctly feel the prolapsed right ovary per rectum. The vagina was virginal, a perfect hymen present, the uterus anteфлекed and pressed down into the pelvis by the abdominal tumour, which distended the abdomen to about the size of a pregnancy at the eighth month. Dr. Clement Cleveland, whom I asked to see the case with me, agreed in the diagnosis. A radical operation being positively refused, we agreed to relieve the inconvenience which the tumour caused the patient, and which was out of proportion to the size of the growth, by tapping it with the aspirator, not anticipating any evil results from the operation, and hoping by the time it filled again to induce the patient and her friends to consent to its removal. Accordingly, November 2d, with the assistance of Dr. M. D. Mann (Dr. Cleveland being prevented), I introduced a medium-sized aspirator needle into the median line, and readily withdrew three quarts of a thick grumous fluid, which under the microscope presented the characteristic appearance of ovarian fluid (granular corpuscles, epithelial cells, diffuse granular matter, oil-globules,

etc.), and coagulated almost entirely by heat and nitric acid. The removal of this fluid permitted the clear mapping out of the tumour, and the distinct recognition of a more or less solid portion posteriorly, and on the right side.

The condition of the patient remained perfectly satisfactory six days after the paracentesis, but then she began to complain of severe pain in the abdomen, her pulse rose to 120, and her strength became so much prostrated as almost to lead me to fear a rapid death from collapse. At the same time the cyst refilled with astonishing rapidity, and ten days after the tapping, exceeded its former size. The abdomen was exceedingly tense, tympanitic above the umbilicus, but not particularly sensitive to pressure. I first attributed this sudden collapse to the rapid refilling of the cyst and the accompanying drain of albumen from the system, and endeavoured to sustain her strength by tonics and stimulants until she should have recovered sufficiently to permit the operation. It soon became apparent, however, that the patient was in a low typhoid condition, and that in all probability suppuration of the cyst had taken place. The pulse remained about 120 and weak, the distension of the abdomen increased rapidly, and the abdominal parietes became mottled, and showed slight œdema, the patient's strength was evidently failing, and I saw that the woman would certainly die within a few days if she were not at once relieved by operation; I therefore consulted Dr. T. G. Thomas as to the advisability of giving her the one chance of recovery remaining, that is, of performing ovariectomy at once, in spite of her extreme prostration. Dr. Thomas strongly advising this procedure, I gained the consent of the relatives, but previous to operating requested Dr. Thomas to see the patient. This he very kindly consented to do, and on Sunday, November 14th, at 10 A. M. made a thorough examination of her condition, at the close of which he informed me that the abdominal tension was so great that neither externally nor per vaginam could he detect the outlines of an ovarian tumour, but that taking the correctness of my diagnosis for granted, he would certainly advise immediate ovariectomy as the last and only hope for the patient. As a precautionary measure he would, however, recommend a small *quasi* exploratory incision, which could be enlarged on reaching the peritoneal cavity, and verifying the presence of an ovarian tumour.

Before deciding on the hour for operation, I introduced a hypodermic needle at four different spots into the transverse colon, as I supposed, where the tympany was most marked, for the purpose of withdrawing some of the air which rendered percussion above the umbilicus tympanitic in every position of the body, and then mapping out the present outlines of the tumour. Through none of these punctures, however, did air escape, and only a few drops of clear serum flowed from the canula.

At 2.30 P. M. of the same day I proceeded to operate, with the assistance of Drs. Cleveland, Mann, G. W. Porter, Paine, and Saunders. Before the operation, the pulse was 120, the temperature 99.5°. When she was placed on the table, Dr. Porter, of the Woman's Hospital, who kindly volunteered to take charge of the anaesthesia, found the pulse so low that he hesitated to administer the ether. After about one dozen hypodermic syringefuls of whiskey had been administered, the pulse rose considerably in strength and continued to do so as the patient came under the influence of ether, which was given rather sparingly during the operation, merely keeping her sufficiently narcotized to render her insensible to pain.

Twice when the face became pallid and syncope appeared imminent, ten drops of the nitrite of amyl (which I had brought with me for such an emergency) administered on a handkerchief at once restored the rapidity of the cerebral circulation and stimulated the action of the heart, as evinced by the flushing of the face and the increased fulness of the pulse.

When anaesthesia was complete, I made an incision one and a half inch long in the median line down to the peritoneum, and while lifting up that membrane with the forceps, and endeavouring to push a director between it and the tumour, the peritoneum and cyst-wall being closely united by diffuse fresh adhesions, the cyst burst and its contents were discharged. I now rapidly enlarged the incision upwards and downwards to three and a half inches, detached the numerous fresh adhesions, which I found extending even into the pelvis, applied a firm figure-of-8 quadruple silk ligature to the pedicle, put on Spencer Wells's clamp, and removed the tumour, which I found to arise from the left ovary, as I had predicted. The tumour was an oligocyst, consisting of one large and several small cysts, and a solid mass of the size of a child's head. Its wall, both externally and internally, was intensely congested and covered with fresh inflammatory deposits; the cyst fluid was purulent and offensive, with masses of fibrine varying from a pea to a lemon in size floating in it. Both the visceral and parietal peritoneum were of a dusky-red hue, and covered with numerous ragged patches of fresh lymph, to which the tumour had been adherent.

After removing the cyst the abdominal cavity was rapidly cleansed (there was some slight oozing from the torn adhesions, but none sufficient to require ligation), but I fear not as carefully as should have been done, had not the still extremely feeble condition of the patient led me to hasten the completion of the operation as much as possible. Indeed I may well say, and the gentlemen present fully concurred with me, that during the whole operation I was in constant apprehension that the feeble fluttering pulse might suddenly give out and the patient die on the table. Without the hypodermics of whiskey and the amyl-nitrite, I doubt not that this would have occurred. Without, therefore, removing every trace of the soft adhesions and flocculent deposits on the peritoneum, as I should have done had I been less hurried, I made haste to close the abdominal wound by silver wire sutures applied in the ordinary manner, securing the pedicle with the clamp in the lower angle of the wound, passed a medium-sized Thomas' glass drainage tube into Douglas's pouch immediately above the pedicle for the purpose of making disinfectant intra-peritoneal injections, and finally covered the abdomen with sheets of cotton batting properly strapped and bandaged down. It was with a feeling of intense relief that I, after the lapse of scarcely more than twenty minutes from the first incision, removed the (living) patient from the table and placed her in the bed prepared for her. She was fully conscious, and expressed herself as feeling very comfortable. Bottles of hot water were put to her feet, a regular course of stimulants (brandy and milk punch), quinia, and beef-tea was ordered, in accordance with the needs and capacity of the patient. The subsequent history of the case is briefly as follows:—

Nov. 14. 4 P. M., immediately after the operation pulse 120, temp. 98°. 8 P. M., pulse 128, temp. 89.5°, in axilla.

15th. 10 A. M., pulse 128, temp. 100.5°. Passed a very good night. 8 P. M., pulse 128, temp. 100.3°.

16th. 10 A. M., pulse 132, temp. 102°. Night rather restless. On

opening the tube an offensive odour escaped from the peritoneal cavity. An injection was therefore made of two quarts of warm salt water, containing gr. x salicylic acid to the pint, and this was repeated regularly three times every day. 5 P. M., pulse 140, temp. 103°. 12 M., pulse 152, temp. 102.5°. Two hypodermics of quinine bisulph. grs. 3 each.

17th. 9½ A. M., pulse 140, temp. 100.5°. Was delirious occasionally during the night; now perfectly conscious, and feels well. Pulse strong; no peritonitis. Was seen by Dr. Thomas, who expressed surprise at seeing her looking so bright, and gave hopes for her recovery. 4 P. M., pulse 140, temp. 100.5°. Quinine bisulph. grs. 3 hypodermically. 8 P. M., pulse 136, temp. 100°.

18th. 10 A. M., pulse 132, temp. 99.2°. 7 P. M., pulse 140, temp. 100.2°. Has had three spontaneous alvine evacuations without pain. Tr. opii, digitalis and hyoseyami were given, aa gtt. xx.

19th. 10 A. M., pulse 148, temp. 101°. Great change; complexion pale yellow; cold perspiration; large parotitis of right side. Evidently septic pyæmia. Case hopeless. Discharge from tube very fetid; strength of injection doubled, tr. opii against diarrhoea. Digitalin (Merek's) gr. ½₁₀ hypodermically to reduce pulse. 2 P. M., pulse 152, temp. 102°. 8 P. M., pulse 172, temp. 102°. Moribund.

20th. 5 A. M., died.

A *post-mortem* meeting with objections on the part of the relatives, and not being likely to afford much additional information, was not insisted upon.

The several features of interest and importance to which I alluded are:—

1. The occurrence of peritonitis and inflammation of the cyst, and decomposition of its contents after the simple operation of aspiration.

2. The performance of ovariectomy during the existence of peritonitis and oöphoro-cystitis, and

3. Incidentally, the influence of the nitrite of amyl in stimulating the action of the heart and counter-acting whatever depressing effect the long-continued administration of sulphuric ether might produce.

1. *Peritonitis and Oöphoro-cystitis following Aspiration.*—Before ovariectomy became a recognized and common operation, the only relief afforded sufferers with ovarian cysts consisted in removing the fluid by tapping with an ordinary trocar, an operation which was, therefore, very frequently performed, and looked upon as almost innocuous. Even at the present day it is a common occurrence, particularly in rural districts, and, probably, there is scarcely an older practitioner who does not remember having done it once or oftener. But statistics show that it is by no means so harmless a procedure as the immunity from danger through it enjoyed by the majority of ovarian tumours would lead us to suppose. Besides inducing a rapid reformation of the cyst contents, and consequent exhaustion of the patient, quite a number of cases died undoubtedly in consequence of the puncture itself. Thomas¹ cites a table by Fock, of Berlin

¹ Diseases of Women, 1874.

according to which of 132 cases of tapping 25 died within a few days, and of 20 cases by Southam 4 died within a few hours. Of 130 cases of tapping collected by Kiwisch 17 per cent. died within several days. This large mortality from an operation which, except in the rarest instances, affords but temporary relief, naturally led the profession to hail in the aspirator of Dieulafoy a safe and equally efficient substitute, by which the entrance of air into the peritoneal and cystic cavity, with the evil consequences thereof, could be avoided. The use of the aspirator chiefly as a diagnostic agent has accordingly become universal in doubtful cases. But of late years the cases have slowly and steadily multiplied, in which even aspiration has been followed, with a rapidity indicating the relation of cause and effect, by inflammation of the peritoneum and cyst, and often decomposition of the contents of the latter, usually terminating fatally, unless cured by speedy removal of the cyst. The size of the aspirator needle seems to be of comparatively slight moment, for one case is reported in which peritonitis followed the now very common, and usually harmless, diagnostic removal of a hypodermic syringeful of fluid. At a meeting of the New York Obstetrical Society, held May 18, 1875, Dr. Peaslee said that a polycyst should never be tapped unless the operator is prepared to perform ovariectomy within twenty-four hours; that in a case, on which he proposed operating on the following day, inflammation of the cyst followed aspiration within forty-eight hours, and that he does not think the aspirator essentially safer than the trocar, which latter is really to be preferred as permitting a more rapid egress to the fluid. In a note to me, dated October 5, 1877, Dr. Peaslee further says, "I have never had peritonitis after tapping or aspirating a *monocyst* or *oligocyst*. It is common in case of polycysts, *i. e.*, inflammation of the cyst is so occurring in at least one-quarter of the cases, and this finally extends to the peritoneum, and ends fatally."

Under the same date, Dr. Washington L. Atlee writes me as follows: "I have known peritonitis to follow partial aspiration, but never a complete emptying of an ovarian cyst. I think it dangerous practice, either in aspirating or tapping, to allow fluid to remain in a cyst capable of leaking."

Dr. A. M. Fauntleroy, of Staunton, Va., reports¹ a case where local peritonitis and adhesions followed a diagnostic puncture with the hypodermic needle. Ovariectomy was performed, but the patient died from emesis and diarrhea.

N. D. Peruzzi, of Florence, Italy, describes a case² in which inflammation of the cyst and decomposition of its contents and septicæmic fever followed the puncture of the cyst on the same day. The patient was saved by ovariectomy during the fever.

Dr. James L. Little, of New York, informs me that he had a case in

¹ Transactions Virginia Med. Soc., 1875.

² Raccoglitori Medico, Sept. 1875.

which the cyst was twice aspirated for the purpose of diagnosis. Within forty-eight hours of the second aspiration symptoms of peritonitis set in. Ovariectomy was at once performed, during which the cyst was accidentally ruptured by traction on a thick adhesion. A portion of the decomposed fluid, which was so excessively offensive as to necessitate the opening of the windows of the apartment, escaped into the peritoneal cavity. It was, of course, carefully cleansed, but the patient died of collapse in twelve hours.

Dr. William Goodell, of Philadelphia, at the recent meeting of the American Gynecological Society, at Boston, in May, 1877, reported a case where aspiration was rapidly followed by inflammation of the cyst and decomposition of its contents. Formidable septic symptoms set in, and he was forced without delay to operate, removing the cyst per vaginam. The patient recovered. Basing the statement on this case and others (all of which are included in this list) Dr. Goodell said that aspiration of an ovarian cyst is never free from danger, and that a polycyst should never be tapped.¹

Dr. Joseph Schnetter, of New York, has kindly handed me the notes of a case in his practice in which electro-puncture had been performed without permanent benefit a number of times. A rapid increase of the tumour rendered the evacuation of the fluid desirable. This was done by an aspirator. Although no symptoms of inflammation are reported as following the operation, ten days later Dr. Schnetter, being sent for, found a development of gas in the cyst (indicating decomposition of its contents) and great collapse. He advised immediate ovariectomy, but on the way to the hospital the cyst burst into the peritoneal cavity, and the patient arrived at her destination in a moribund condition, and died the next day.

At the meeting of the New York Obstetrical Society, held June 5, 1877, Dr. William T. Lusk reported two cases, in which aspiration of the cyst was followed by rapidly fatal peritonitis within forty-eight hours. Besides the nine cases here mentioned, there have doubtless been others, which have either not been reported, or if published could readily be found by searching the literature of the past few years. Indeed, judging from Dr. Peaslee's statement, above quoted, inflammation of the cyst with consequent peritonitis after aspiration must be a very common occurrence, much more common, I believe, than the majority of the profession are aware. At all events, experience renders it tolerably evident that the less an ovarian cyst is punctured and interfered with before the radical operation the better, and that aspiration, at least with a regular aspirator needle, should be performed only when indispensably necessary to the diagnosis, and when the fluid will not flow through the canula of an ordinary hypodermic syringe. The latter I should always employ for diagnostic purposes, if

¹ Abstract of Proc. of Am. Gyn. Soc., Amer. Journ. Obst., Oct. 1877.

possible; and in cases where it is *necessary* to evacuate the contents of the cyst to give *immediate* relief until ovariectomy can be decided upon and prepared for, or to permit diagnostic examination in a doubtful case, I should prefer the old trocar and canula as more convenient, and (according to Peaslee) no more dangerous than the aspirator. In any case, hypodermic syringe, aspirator, or trocar, I should be prepared, *ceteris paribus*, to perform ovariectomy on the slightest symptom of septic inflammatory reaction, provided, of course, the patient wishes to take the only chance left her for life.

2. *The Performance of Ovariectomy during the Existence of Peritonitis and Oöphorocystitis.*—Formerly it would have been thought simply murderous to admit air to an inflamed peritoneal cavity. But in the year 1865, Keith, of Edinburgh, followed the dictates of common sense and sound reasoning, which indicated the removal of the exciting cause of the septic inflammation, and performed ovariectomy in a case where peritonitis and inflammation of the cyst, following seven days after tapping, had apparently doomed the patient. Fortunately for the future of the indication, he was successful, and proved the correctness of the principle by saving his patient.¹ Veit, of Bonn, followed his example in 1867, but did not succeed in saving the case.² W. A. Freund, of Breslau, appears to have been the next to undertake this operation, for on May 13, 1871, he removed an inflamed multilocular tumour from a patient with subacute peritonitis (also succeeding tapping), and saved the patient. Another case soon presented itself to him, in which decomposition of the cyst contents and excessive distention of the cyst by air, with general septic fever, rapidly followed tapping; ovariectomy was quickly decided upon as a last resort—performed May 19, 1872, and in twenty-one days the patient left her bed well.³

Including the instance already quoted, Keith has operated on fourteen such cases, taking the lead of all other operators in this respect, as he does also in his ratio of successes, which surpasses even that of Spencer Wells, who, however, far exceeds Keith in numbers. The last case of ovariectomy during septic peritonitis, performed by Keith, was a most desperate one, and shows under what unfavorable circumstances recovery may take place.*

On the morning of the proposed ovariectomy the cyst burst; aspiration was performed. The temperature rapidly rose to 105° F., the pulse to 130; vomiting and pain, urine albuminous, lips black and dry. This state of things lasted ten days, the temperature varying between 103° and 105°. Notwithstanding the apparent hopelessness of the case, ovariectomy was performed, and the gangrenous, excessively fetid cyst and contents removed. The intestines were bathed in putrid lymph, and were adherent to each other and the cyst. The peritoneal cavity was washed out with a solution of carbolic acid, a drainage tube introduced, and the

¹ Lancet, July 8, 1865.

² Diseases of the Female Sexual Organs, 1876.

³ Berlin Beitr. zur Geburtshülfe, vol. ii., 1873.

* Lancet, March, 1877.

wound closed by wire sutures. Although the vomiting continued for two days, the temperature then fell to 100°, and the patient gradually improved, and was discharged well three months after the operation.

One case only of this kind has occurred to Dr. Thomas, so far as I am aware (the patient recovered); two to Dr. Emmet¹ (both recovered); six to Dr. Peaslee (five recovered);² three to Spencer Wells, one to Teale; one each by Peruzzi, Goodell, and Little, have already been alluded to. Dr. Atlee informs me³ that he recently had two cases of ovariectomy following rupture of cysts and severe peritonitis; both cysts were multilocular, and the operation was performed several days after the accident, when the patients were under great prostration; both tumours were everywhere adherent by coagulable lymph, and were carefully and readily shelled off, leaving it adherent to the viscera. Both patients made a good recovery. Dr. Atlee says, that, "when possible, he would advise an immediate operation after the rupture of the cyst." This list of Dr. Atlee's cases is unfortunately not complete, as his departure from home prevented his answering my queries as fully as I could have wished. Dr. Gilman Kimball, of Lowell, Mass., writes me, October 11, 1877: "In regard to my cases of ovariectomy, in which peritonitis was found present at the time of operation, I find it very difficult to speak as definitely as I could wish. The special point in question would require an examination of my entire record of cases, now numbering 221. I can, therefore, only speak of those which come to me on *reflection*. So far as I can now recollect, I have never operated where I was satisfied of the presence of what might be strictly termed *acute* peritonitis, except in a single instance. In that case there was a thick layer of recently formed lymph over the entire front of a very large multilocular tumour, but not affecting the peritoneal covering of the intestines. In some ten or twelve instances I have met with evidences of chronic peritonitis, incident, as I suppose, to the existence of ovarian disease. This condition has been particularly marked in those cases where there had been a rupture of one or more cysts previous to operation; and then again in cases of *peritoneal effusion* connected with ovarian disease. I have noticed in some half-dozen instances masses of lymph floating in the serum. It is perhaps worthy of remark, that I have never seen a case of peritonitis, recent or chronic, where the tumour consisted of a single cyst. The disease has always been polycystic, and made up, in part at least, of solid matter. As for results, I cannot state exactly how the record stands. I can safely say, however, that at least one-third of the cases with peritonitis have recovered; this was the fact with the cases of acute peritonitis above referred to."

Besides these thirty-five cases, doubtless others have been performed during the past few years, certainly sufficient in number and satisfactory

¹ Thomas, *Diseases of Women*, 1874, pp. 676, whence the cases of Wells and Teale are also taken.

² Private letter, above mentioned.

³ *Ibid.*

enough as regards ratio of recoveries (32 out of 35) to confirm the indication beyond the shadow of a doubt. The universally accepted opinion of ovariectomists now is that the only chance for life offered a patient with septic fever depending on inflammation of the cyst or suppuration of its contents, complicated by acute or subacute peritonitis or not, is to remove the cyst as rapidly as possible. The physician who hesitates to do so is, in my opinion, derelict in his duty.

My great regret is that, new as this accident was to me in my ovarian experience, I did not operate within a day or two after the febrile and septic symptoms became manifest, instead of waiting over a week. Possibly the patient might then have escaped the fatal septicæmia.

3. *The Influence of the Nitrite of Amyl in Counteracting the Depressing Effects of Ether during Anæsthesia, by Stimulating the Heart's Action.*—Based on the property claimed for the then newly discovered nitrite of amyl of stimulating cardiac activity by paralyzing the vasomotor system, and, consequently, charging the brain with blood, the idea occurred to me to take the remedy with me, and to use it in case the, as I knew, exceedingly feeble pulse should flag during the operation. As I have already stated, the beneficial effects in stimulating the heart, and thus permitting the continued administration of ether, were witnessed by all present, and are unquestionable.

While not using the agent in this case specially to counteract the depressing influence of a long anæsthesia, it undoubtedly did act also in this manner, and I thus unwittingly fell upon a plan as regards ether, which was suggested a year later¹ by Dr. F. A. Burrall, of New York, with reference to syncope from chloroform. Two cases of resuscitation from chloroform syncope by amyl-nitrite have lately been reported by Dr. Pileher in his Report on Croup and Diphtheria, and very recently² I find a case published in which the inhalation of the nitrite of amyl, which, fortunately, was at hand, according to the testimony of physicians present, revived the patient from the sudden chloroform collapse, and saved her life.

I have since adopted the precaution of always carrying a vial of nitrite of amyl with me when I go to administer chloroform or ether, and it certainly is a practice which I should recommend others to follow.

¹ New York Med. Journ., Nov. 1876.

² Brit. Med. Journ., Aug. 18, 1877.

ARTICLE VIII.

ON THE DUTIES AND RESPONSIBILITIES OF GENERAL PRACTITIONERS TOWARDS MELANCHOLICS AND SUICIDES. By A. O. KELLOGG, M.D., of the Hudson River State Hospital, Poughkeepsie, New York.

THAT condition of mind, whether it be of desperation or disease, sanity or insanity, which leads an individual to the commission of self-murder is one which most assuredly calls for the careful consideration, not only of the medical jurist, the moralist, and psychologist, but the general practitioner of medicine, under whose observation, if before it is too late these cases come under any useful observation at all, they are most apt first to fall.

No class of patients are more embarrassing to the general practitioner than those cases of mild incipient melancholia with depressing delusions and suicidal tendencies. Even in an institution where every means of guarding and observing them is had, they give more trouble and are a greater source of anxiety than any other. They can never be trusted, their mental acuteness, their cunning, and, to the superficial observer, their apparent sanity, serve to put the physician, as well as attendants and friends, off guard; and their faithful promises of self-control are apt to be relied upon, till some fine morning or calm evening a case of cut throat, drowning, pistol-shot, poisoning, or strangulation is presented to our horrified gaze, a family is thrown into deep distress, a whole community, profoundly shocked, sympathizes with them, and, as a rule, blindly blames the doctor.

One of the most serious difficulties the general practitioner has to contend with in all these cases in their incipency, is the concealment of grave symptoms by the family. People have yet to be educated up to the thought of looking at these symptoms of unusual depression, which lead to such untoward results, as they would upon any other symptoms of disease. Sleeplessness, loss of appetite, and general *malaise* they are ready to meet, but as soon as the patient passes into the next stage of his malady and ventilates delusions of a dangerous character—such as the fear of poverty, disgrace, eternal damnation, etc., and shows a disposition to act on them to the great danger of himself or members of his family, all is concealment, and these things are scarcely mentioned, even to the physician, for fear of publicity and disgrace; while, at the same time, they hold him responsible for the safety and treatment of their friends. No one knows better than a physician placed in my circumstances how strong is this feeling, and how even we are sometimes troubled to get at all the facts of the case.

Until the public can be taught to face all these grave mental symptoms and lay them before their medical advisers as fully as they would any physical symptoms in other diseases, they must be prepared to take the

consequences of withholding them ; for the physician cannot be made the scapegoat in all cases, though perhaps in some he is led to yield feebly to the prejudices of his patrons, or, as I have known, to motives of a baser character, until culpability follows from the neglect of a grave responsibility.

So unwilling are friends to act efficiently upon the earlier symptoms of this grave malady (for indeed it *is* a *grave* malady, even in the sense in which the term is used by Mercurio when the hole through his body, though not as large as a church-door, was sufficient to make him a *grave* man) that the earliest evidences are not apt to come under the observation of physicians in my position ; sometimes, creditably to the intelligence of friends, and generally fortunate for the patients, I may say, without either arrogance or egotism, they do come before us promptly.

These early symptoms are the ones to which I desire especially to direct attention at this time—symptoms which are often neglected too long, sometimes for years, without any untoward results, but in the end often most unhappy in their termination. As I penned this paragraph I took up the morning paper, and almost the first line which met my eye illustrates this remark.

“Mrs. Daniel Kunziman cut her throat fatally, early yesterday morning, with a razor. Since the death of her two children, *two* years since, she has been mentally depressed.”

Scarcely a paper can be opened that does not contain some similar announcement. Here the symptoms had lasted for two years, and no notice appears to have been taken of them.¹ Now another great difficulty to the general practitioner lies in the fact that these earlier symptoms are not apparently so grave as to call for any special attention ; the delusions, if developed, are carefully concealed by the patient, and there is nothing to the superficial observer on which insanity can be so certainly predicated as to call for treatment, much less for seclusion or restraint. Still, as in all diseases, there are premonitory symptoms which should be carefully watched and met, and these I now proceed to point out.

Frequently the patient himself is conscious that there is something wrong with him, and sometimes he will mention symptoms of a change in character, conduct, disposition, or feeling, which even his friends, if they observe them, are not willing to point out, or feel a delicacy in doing so. He sleeps badly, has disturbing dreams, perhaps, and is up wandering about his room. His digestion is bad, breath foul, and bowels constipated.

¹ The *New York Herald* of the 7th inst. reports thirteen suicides and nine cases of drowning, termed accidental, as occurring in the month of May last. This is equal to the palmiest days of suicidal Paris, when bodies were fished out of the Seine, or picked up at the foot of the Column Vendome, every morning. Many of these suicides were, no doubt, the direct offspring of want and desperation ; others, probably, from established melancholia resulting from the same. In either case, whether the cause was direct or indirect, remote or immediate, the result was equally sad.

The usual scapegoats for all physical and mental evils, the stomach and liver, are charged with not doing their duty, or doing it imperfectly; there is great listlessness, torpor of the functions of the brain and nervous system, thought and feeling, which torpor may be followed in time by exaltation of the same faculties—periods of depression alternating with periods of exaltation.

Now it is in this state that medical treatment is demanded and in which it tells best, and if it is neglected, the headache usually present becomes more aggravated, the sleep more and more disturbed, and the patient goes on from bad to worse, till he passes into the next or delusional stage.

In this first stage, though he may have made neither threats nor attempts at suicide, he is very uncertain, and should be watched as well as treated, for at any time he may lose self-control and destroy himself. It is scarcely necessary for me to point out the indications of treatment to a society of experienced medical gentlemen, as such will readily suggest themselves.

The general health must be looked after, digestion and sleep must be attended to, especially the latter, for if it becomes less and less the patient is sure to go on from bad to worse. To accomplish this I use various remedies, and in various combinations as seem to be indicated by the individual case. Among these I will mention the following, giving them in the order in which we have found them most useful: 1st, hydrate of chloral, in doses of from 10 to 60 grs.; tincture of hyoseyamus, made from Squibb's extract, from \mathfrak{Sj} to \mathfrak{Siij} ; officinal solution of morphia, from \mathfrak{Sj} to \mathfrak{Siij} . Each of these remedies will do well in combination with the others, in the doses of each spoken of, and will generally accomplish the purpose and procure from two to six hours of good, natural sleep, when the dose may be safely repeated. I have yet to see any evil consequences result from the combination of any two of these remedies in the doses above indicated. The hydrate of chloral in combination with tincture of hyoseyamus is, according to our experience, the best in a large majority of cases. Opium is not tolerated in many cases of this as of other diseases, and will aggravate the very symptoms it is given to relieve, and produce insomnia. Still, there are cases in which morphia, in combination with hyoseyamus, acts admirably.

We must not fail to look closely after the causes of all these symptoms and seek to remove them. In a very large majority of cases overwork and exhaustion from innutrition, or, in women, exhaustion from lactation, will be found, and these must be remedied. Other causes will oftentimes be adduced by friends, which, on close examination, it will be found have not been operative, but others that have been will be readily traced. The cause, indeed, may have passed away before the case is seen, as frequently happens; but its effect upon the brain will still have to be dealt with, and this is sometimes very lasting, and will require much time for its removal

and much patience on the part of both friends and physician. Frequently, however, by the judicious management of this early stage much will be done towards preventing the evils of a more advanced condition. In nearly all cases there should be some change in the external circumstances of the patient, and here many things must be taken into account.

One of the first means proposed is to attempt to divert the patient's morbid thoughts from himself by travel; but, according to my experience, this is of little use, for the patients take their diseases with them, and though they take their physicians along, time must do the work, while the physician must do the watching, and this latter duty is not by any means as easy as the simple prescribing of drugs. If he travels by rail the physician is constantly harassed by the thought that every comfortable drawing-room car may at any moment become a car of Juggernaut to his patient; and if he travels by steamship, the temptation to sea-bathing from the stern of the ship is, as in the case of a late judge of the Supreme Court of this State, too great for the resistance of the patient or the vigilance of the physician.

A trip of any kind, except to a hospital, in the early stages of melancholia, as in all other diseases, is worse than useless, a delusion, and a snare, however useful such may be in promoting convalescence when this is once fairly established. Melancholia, like every other disease, in its early stages requires rest, care, and treatment, and wherever these can be best secured is the place for the patient.

Wherever he is, he must be carefully nourished and sustained by a full generous diet. From fear of biliousness or indigestion, he has probably fasted, abstained from food at least, and perhaps from drink; but as to the last it is not improbable that he may have indulged excessively in stimulating beverages. These in moderation, however, are not without their use, for in all such cases there is generally deficiency of nerve and brain force, which, next to good nutritious food, is supplied by wine, eggs, milk, malt liquors, iron, quinine, strychnine, arsenic, etc., as, in the judgment of the physician, may seem indicated. But in spite of all your efforts, all your care, nutrition, medication, and watchfulness, the case, as often happens, goes on from bad to worse. Most extraordinary delusions arise, and prompted by these delusions we witness the most extraordinary conduct, and acts, often most ludicrous, sometimes dangerous, always painful to the truly humane observer, however amusing they be to the thoughtless and impertinent, from whose observation they should be carefully guarded. Delusions, as we have said, of a most painful character take full possession of the mind. A poor woman now under my care refuses food, under the delusion that it is prepared from the bodies of her children, who are all dead, and she has had to be nourished with the stomach tube. A highly intelligent, educated, and wealthy gentleman, now under my care, under the delusion that his family are down in the

water-closet, refuses to pass his motions there, and soils his clothing, his room, and even the hall where others are, if not watched closely. He is unwilling to take food because he is too poor, and because he thinks doing so will bring his family to want.

The other day I stood by while an attendant was patiently urging him to take a glass of milk punch. He looked at me piteously and asked to be excused from drinking, as the drouth was already so great that the world was being burned up, and for him to drink anything would do him no good, but only hasten the catastrophe.

A medical gentleman, once of some local eminence in New York City, now a melancholic under my care, maintains that he is burned to a cinder, and will hold out his hand to you and insist that it is "cremated." His clothing, like the fiery shirt of Nessus, burns him so dreadfully at times that even in the coldest winter weather he will strip himself entirely nude. At other times, though he is never entirely free from his dreadful delusion, he is more comfortable, and then he will make as correct a diagnosis, and as judicious a prescription for a fellow-patient in the ward, as any sane physician. He also perceives the ridiculousness of the delusions of others, and will comment upon, and sometimes laugh at them, without the power to recognize his own.

Another gentleman, of many polite accomplishments, bears in his forehead the scar of the pistol ball with which, in a moment of utter desperation and depression, incident to melancholia, he sought to escape from the world and its sorrows and perplexities. During much of the time this gentleman is comparatively comfortable, though never cheerful. One peculiarity of his case, which contributes much to his safety, and lessens greatly our anxiety respecting his care, is that he knows well when one of his paroxysms is approaching, and will warn us, if we have not already perceived it, that we may place him under closer surveillance, and even in mechanical restraint if it is deemed advisable.

Such are the characteristics of a few cases now under my observation. I might go on multiplying them from memory, but those given suffice for my present purpose.

Some melancholies are so life-weary, and, without any special delusions, perhaps, are so depressed in spirit, and like Hamlet take such gloomy views of the world and all that it contains, that they sigh constantly and seek continually to be out of it and at rest. *How* they get out of it they care not, and what they may possibly encounter in that "undiscovered country from whose bourne no traveller returns" has no terrors weighed in the balance with their present misery.

"Oh let me die," said a poor woman once to me, "in any way. I care not how; put me in the furnace if you see fit." and I certainly believe, from the desperation of her attempts, she would have plunged in the flames if allowed. Another, similarly affected, concealed matches, and retiring

to rest, set herself and bed on fire, and was fatally burned. I believe a similar case occurred not long since in the city of Poughkeepsie, though I am not acquainted with the particulars.

And now I ask, in conclusion, what are general practitioners to do with such cases? I speak now as one who has been in general practice, and my answer is, they must be placed at once, and as quietly as possible, in some hospital devoted to such diseases.

The only conditions under which I would assume the care and responsibility of such outside of an asylum, can scarcely ever be had. If we could convert their homes even into a *maison de santé*, send away the family, the most perplexing element to which we or they can be subjected, have in their place a sufficient relay of experienced attendants that could be held to a strict accountability for the life and well-being of the patient, even then I should doubt my ability to care for them as they should be. I should certainly hesitate, in view of some experience I have had in their care, even under such circumstances. It is quite enough to assume the responsibility, care, and treatment of such cases when we are furnished with all the appliances and means which the science and Christian humanity of modern times has placed at our disposal.

ARTICLE IX.

ACUTE INFLAMMATION OF THE MIDDLE EAR: DESTRUCTION AND REPRODUCTION OF THE ENTIRE MEMBRANA TYMPANI. By LEARTUS CONNOR, M.D., Professor of Physiology and Clinical Medicine in Detroit Medical College.

On Saturday, April 14, 1877, I was called to see Mr. Jas. D. for an intense pain in his right ear. Mr. D. was a resident of Detroit, forty-two years old, English by birth, a bricklayer and builder by trade, of nervo-sanguine temperament, married for ten years, the father of three children, an enthusiastic, industrious worker, and temperate in all his habits.

I found the patient lying in bed, giving every evidence of extreme suffering. On inquiry I found that about eight days before the date of my visit he was taken with a severe cold, sore throat, swollen tonsils, headache, and slight febrile disturbance. These symptoms gradually increased until on Tuesday last, when there was added to them a pain in the right ear. This pain increased daily, and was attended by great throbbing of the right side of the head; a hyperæsthesia of skin covering these parts, and neuralgic pains in various branches of the fifth nerve. All this time he had been going out and attending to his business. On Thursday, two days before I saw him, he became alarmed, and sent for his family physician, Dr. E. W. Jenks. He, finding a severe tonsillitis and pharyngitis, prescribed accordingly. The following day, on his own prescription, the patient applied a hot poultice to his ear, but obtained no relief. Dr. Jenks being ill, this day, the patient was seen by Dr. Geo. P. Andrews. On

Saturday, being convinced that there was trouble in the middle ear. Dr. Andrews called me to take charge of the patient.

On physical examination I found the nares almost occluded by the swollen mucous membranes. The tonsils were enlarged, especially the right one, and with the elongated swollen uvula they obstructed both respiration and deglutition to a considerable extent.

The entire right auricle was sensitive to the touch, and somewhat swollen. Below and posterior to the auricle, but in close connection with it, there was a spot exquisitely painful to touch or to any movement of the auricle. There was no tenderness of the mastoid process aside from that of the skin. Any pressure upon the tragus, or just anterior to it, caused the patient to cry out. Using a large concave mirror attached to my forehead and aural specula, I found the external auditory canal swollen, red, and tender. After some difficulty I succeeded in getting a good view of the membrana tympani. It had a peculiar slimy, soggy, distended, and dead look. There was no sign of the handle or head of the malleus. Despite the greatest care during the necessary examination, the use of the specula caused much pain.

No outside sound could be heard by the affected ear, not even the tick of a watch in contact with the ear.

Patient complained of shrill, loud, whistling, and buzzing sounds in his right ear, and he likened them to the escaping steam from a dozen steam engines. My diagnosis was acute otitis media.

Leeches failing to afford relief when applied near the tragus, I used a warm water douche. Some considerable benefit from this was observed by the patient. In a few moments, however, there appeared in the receptacle for the water which came from the ear, an ovoid-shaped disk, having diameters apparently similar to those of the inner extremity of the auditory canal. Dropping the douching apparatus I at once examined this disk. It was perfectly smooth on both sides, except for a little space about as long and broad as the handle and head of the malleus. The edges were very regular, almost as if it had been cut by a punch. Its thickness was quite uniform, and as I estimated between one and two lines. A re-examination of the ear with mirror and speculum enabled me to see the ossicles in place, surrounded by the inflamed lining of the middle ear. The most careful scrutiny at this and many other times during the next two weeks, failed to detect a particle of the drum remaining in the ear.

I informed the friends that the drum of Mr. D.'s ear was completely destroyed, that the walls of the middle ear, the Eustachian tube, pharynx and nares were involved in a severe inflammation, that he would probably recover, but that the drum would not be restored nor much of his power of hearing.

I left directions for the use of the hot water douche every two or three hours, as needed for the pain; also a mixture of opium and bromide of sodium.

On my way home I called at Dr. Jenks's office, and exhibited to him the necrosed membrana tympani, pointing out its peculiar shape, its swollen and soggy condition. That I did not preserve the drum was due to the fact that I saw no reason for so doing. No case had ever fallen under my observation or reading that had terminated other than as I had indicated in my prognosis.

For the next six weeks I saw the patient two or three times each day. The pains in his head, or deep in his ear, were of such intensity that dur-

ing the first month I was unable to control them so as to produce a comfortable sleep. Narcotics alone or in combination seemed to do more harm than good. Hydrobromic acid was of great and positive service in producing an endurable quiet, and especially in alleviating the various whistling and ringing sounds. It was given in drachm doses every two to six hours as needed. As a nerve tonic quinia bromide was administered quite freely. Every care was taken to sustain the general strength, and to promote the most perfect nutrition, general as well as local. At no time was there any considerable discharge of pus. The swelling of the throat, Eustachian tubes, and nares gradually subsided, so that air passed readily out of the ear each time the nostrils were blown, and the douche of water passed through the ear into the throat and nares. The severity of pain and irritation of the auditory nerve continued with but little abatement till May 16th.

The details of my daily observations for the first six weeks have no special importance, hence I will merely give the state of my patient at a few separate intervals.

May 16. Found him decidedly better. The escaping-steam sounds were less. Loud voices could be distinguished, but not the ticking of a watch. Air passes less readily through the ear on blowing the nose, and water no longer runs into the throat when the ear is douched. Careful examination, with the head mirror and ear speculum, shows a vascular projection around the entire auditory canal exactly at the site of the former membrana tympani. The projection was greatest at the bottom of the auditory canal, and gradually diminished to the horizontal diameter, the upper portion being nearly uniform. The first appearance of this growth was noticed two weeks anterior to this date. On May 26th the entire opening was closed, and the external ear perfectly separated from the middle. Through the speculum this new growth appeared red and shining. On blowing his nose the patient says that the sensation is identical to that in the unaffected ear. For the first time he hears a watch, but not more than an inch from the ear. He now goes down stairs to meals, and occasionally drives out. His appetite has returned, and other functions are normal.

June 15. Examination of the drum revealed marked changes in its lower and anterior third, so that this portion closely resembled the normal drum membrane. The remaining portions of the drum are still vascular, and there is no sign of the handle or head of the malleus. Ordinary conversation is heard, the patient states, as well as ever, and even whispering, but by the watch hearing is only $\frac{1}{8}$.

30th. The head of the malleus was distinctly seen, also patches of clear membrane, mingled with red, throughout the upper and posterior portions of drum. Watch can now be heard at $\frac{2}{8}$.

August 25. The redness of the membrana tympani has all disappeared. There is one considerable opacity in the lower and anterior segment, but otherwise the drum membrane very closely resembles that in the sound ear. The Eustachian tube is open, and its inflation causes the usual movements of the membrana tympani. Watch can now be heard at $\frac{4}{8}$.

ARTICLE X.

LITHOTRITY BY A SINGLE OPERATION. By HENRY J. BIGELOW, M.D., Professor of Surgery in Harvard University, and Surgeon to the Massachusetts General Hospital.

WHEN Sydney Smith asked, "What human plan, device, or invention two hundred and seventy years old does not require reconsideration?" he would no doubt have regarded with favour an occasional reconsideration of the theory and practice of medicine and surgery—especially in view of the current belief, that their traditions have been kept alive and their rules prescribed in part by authority. The surgical literature of lithotomy, both French and English, so long showed the influence of the early specialists, that we have hardly now escaped from its exaggerated circumstance and detail. And yet, with attention to a few precise rules, the operation of lithotomy is quite a simple one—much less difficult, for example, than the dissection of tumours. It is not impossible that convictions in some degree traditionary may prevail in regard to certain points connected with the practice of the more recent art of lithotripsy.

Civiale was among the first to inculcate the excessive susceptibility of the bladder under instruments. Later surgeons, perhaps influenced in part by his teaching, have continued to invest the operation of lithotripsy with precautions, which, though by no means groundless, because under certain conditions both the bladder and the urethra are actively resentful of even slight interference, are nevertheless greater than this operation generally requires. As a rule, there is little difficulty in it. The stone is readily caught and broken into fragments, of which a few are pulverized; a large-eyed catheter is then sometimes introduced; a little sand and a few fragments of stone are washed out; after which the patient is kept quiet to discharge the remainder, and await another "sitting." Under favourable circumstances, such an operation, lasting a few minutes, is not only simple, but safe. Yet the fact that it is not always so could not fail to arrest the attention of surgeons. It may happen that during the succeeding night the patient has a chill: not the chill of so-called "urethral fever," which sometimes follows the mere passage of a bougie, and which is of little consequence; but one accompanied or followed by other symptoms, such as tenderness of the region of the bladder, a quickened pulse, and the frequent and painful passage of urine. These symptoms may insidiously persist, rather than abate; others may supervene. The surgeon vainly waits for a favourable moment to repeat his operation; it becomes too evident that the patient is seriously ill, and it is quite within the range of possibilities that in the course of days or weeks he may quietly succumb. An autopsy discloses a variety of lesions; some of them remote or obscure, others of more obvious origin; and among these, not the least common, an inflamed bladder, upon the floor of which angular fragments

and chips of stone are resting. It is then evident that during a certain interval before death the bladder was not in condition for further instrumental interference; and although, in view of the fatal result of delay, lithotomy or active lithotrity, to both of which in cases like this I have resorted, might have been on the whole the least of evils, it is plain that either operation would have furnished in itself an additional cause of serious inflammation.

Such a result might be supposed to point to the necessity of extreme precaution; and it will be justly urged that the purpose of such interference at an unfavourable moment is the removal of the offending fragments as a last resource. But if at the first operation the bladder could have been completely disembarrassed of every particle of stone, even with the risk of irritating its lining membrane, we can hardly doubt that the relief would then have been followed by ready repair. In short, it is difficult to avoid the conviction, that, in an average case, damage to the mucous membrane, and quite as great, is as likely to follow the persistent irritation of angular fragments as the protracted use of instruments for the entire removal of a stone, provided only this can be accomplished.

It is probable that the injury from the use of instruments has been in some measure confounded with that resulting from the presence of fragments in the bladder. That the average bladder and urethra have no extreme susceptibility is attested by the generally favourable results of lithotrity, and even of catheterism, which are practised with very varying skill everywhere; also by the singularly innocuous results of laceration of the contracted urethra, by an instrument like that of Voillemier for example; so, too, by their recovery from the considerable injury inflicted during the extraction of a large and rough stone in lithotomy. The bladder is often also tolerant to an extraordinary degree of the presence even of a mulberry calculus. When we remember that in this case it clasps the stone at every micturition, often with a persistent gripe, the comparative immunity of its tender mucous membrane is quite remarkable. But when sharp fragments are thus embraced, presenting fresh and acute angles, which do not soon become blunted, and to which the bladder is unaccustomed, it is more remarkable that serious consequences are the exception, and not the rule, in lithotrity. Polished metallic surfaces carefully manipulated can hardly do such damage as the agencies here enumerated.

Gentleness, dexterity, and experience are especially to be valued in lithotrity. It has been well said, that no novice should undertake this operation. But the habit of confounding the symptoms resulting from the presence of fragments with those following the use of instruments originally led to precautions in the introduction and manipulation of the latter which were sometimes excessive. Civiale, with an almost unparalleled experience, introduced a small lithotrite with much less pressure than its own weight, and with uniform and great slowness. And yet, in a healthy

urethra, it is only at the triangular ligament and beyond it that such extreme care is called for. Civiale, who had no means of evacuating fragments in the bladder, restricted the length of his operation to two or three, or perhaps five, minutes. The same solicitude seems to have led Sir Henry Thompson, in his admirable and standard work upon this subject, to assign two minutes as the proper average duration of a sitting; a period which his exceptional skill has often in his own practice enabled him materially to reduce. I have been gratified to find, however, that since he has availed himself of the advantage of etherization he recognizes the benefit to be derived from somewhat more prolonged manipulation. My own conviction is, that it is better to protract the operation indefinitely in point of time, if thus the whole stone can be removed without serious injury to the bladder. I believe, that, in any case which is as favourable to lithotrity as the average in these days when stones are detected early, this can be effected; and that, if the bladder be completely emptied of detritus, we have as little to apprehend from the fatigue of the organ consequent upon such manipulation as from the alternative of residual fragments and further operations. The duration of the sittings in the cases reported at the end of this paper varied from three-quarters of an hour to three hours and three-quarters. The bladder can be thus completely and at once evacuated, in a majority of cases. The stone, after crushing, can be removed through the urethra by a tube contrived for the purpose.

But has not this result already been attained by evacuating instruments variously devised and modified? The following quotations from the latest authorities sufficiently answer this question in the negative:—

“We may here say, without fear of being accused of exaggeration, that evacuating injections practised after sittings of lithotrity have no apology for their use. *The whole surgical arsenal invented for their performance is absolutely useless. . . . It should be well understood that the best of the evacuating catheters is worthless.*” (Article “Lithotritie,” by Demarquay et Cousin, in the *Nouveau Dictionnaire de Médecine et de Chirurgie Pratique*, Paris, 1875, pp. 693-4.)

“*The practice of injecting the bladder to wash out detritus is obsolete. . . . The apparatus of Mr. Clover should not be employed, if it be possible to dispense with it; as its use is quite as irritating as lithotrity itself.*” (S. D. Gross, *Diseases, etc., of the Urinary Organs*, Philadelphia, 1876, p. 232.)

“*Having used it very frequently*” (Clover’s Apparatus). “*I would add that it is necessary to use all such apparatus with extreme gentleness, and I prefer to do without it, if possible.*” (Sir H. Thompson, *Practical Lithotrity and Lithotomy*, 1871, p. 215.)

“*All these evacuating catheters are little employed. They require frequent and long manœuvres which are not exempt from dangers; besides, they give passage, as a rule, only to dust, or to little fragments of stone, which would have escaped of themselves without inconvenience to the urethra.*” (Article, “Lithotritie,” by M. Voillemier, *Dictionnaire Encyclopédique des Sciences Méd.*, 1869, p. 733.)

In short, the “evacuating apparatus” hitherto employed does not evacuate.

It is not a recent contrivance. From the earlier days of lithotrity, the operation of breaking the stone has been followed by the obvious expedient of introducing a large and special catheter, through which water was in-

jected and allowed to escape, bringing away a little sand with a small fragment or two. This attempt at evacuation was aided by suction. With this object, and before the year 1846, Sir Philip Crampton employed an exhausted glass globe. For the same purpose a syringe has been used, or a rubber enema or hydrocele bottle, with which fluid could be also injected and the bladder washed. By entering the catheter well within the bottle or syringe, fragments were dropped inside the neck, where lying below the current, they were not returned to the bladder when the bottle was again compressed. When this neck was made of glass by Clover, the fragments became visible; and to this neat arrangement the accomplished lithotritist, Sir Henry Thompson, refers, as Clover's bottle. But neither the previous practice nor the efficiency of evacuation by suction through a tube had been materially advanced. In the mean time the syringe was modified in France by a rack and pinion attached to the piston, so that water could be injected and withdrawn with great force; a procedure not only useless, but detrimental to the bladder, if it be inflamed and thickened.

Before describing my own instruments, it may be well to say a word in regard to the introduction of instruments, especially large ones, into the bladder; an important subject in this connection.

A syringe facilitates an abundant use of oil whether in the urethra or within a tube. Into the normal urethra a straight instrument can be introduced with at least as much accuracy as a curved one. Either may be passed rapidly as far as the triangular ligament—unless the instrument is very large, in which case great care is required not to rupture the mucous membrane. Having reached this point, which requires that the instrument should be passed as far as it will go in the general direction of the anus, the extremity of the instrument depresses the floor of the urethra in front of the ligament. Traction upon the penis next effaces this depression, and adds firmness to the urethral walls; so that if the instrument be withdrawn a little, and, at the same time, guided by the bony arch above, it can be coaxed without difficulty through the ligament in question—a natural obstruction which physicians often mistake for a stricture. This obstruction passed, the rest of the canal is short, and corresponds to the axis of the body. Even the enlarged prostate can often be traversed advantageously by a straight instrument. In fact, a prostatic catheter, as is well known, consists mainly of an inch or two of straighter tube added to the extremity of a common catheter, to reach through the unyielding prostate before the hand is depressed and the beak turned up. In passing either a sound, catheter, or lithotrite, the extremity of a straight instrument, and, which would be less expected, the convexity of a curved one, may be arrested just at the entrance of the bladder by the firm lower edge of the inner meatus. The fact that water now passes through the inner meatus thus dilated, or that a stone is felt with the tip of the curved instrument which has really entered the bladder, may lead the operator into the mistake of supposing

that the instrument is fairly in it; and I have known its further entrance, after sliding over this obstacle, to be erroneously attributed to the existence of a second, or hourglass cavity, in the bladder itself. To obviate this difficulty, and so soon as the triangular ligament is passed, the catheter should be pressed through the indurated neck, or prostate, in the direction of the axis of the body, with the hand on the perineum; a most efficient manœuvre, when the prostate is large. If there be doubt, the tip should of course be sought and guided in the rectum. After introduction, a straight tube, or the shaft of a curved one, returns to an angle of about 45° with the recumbent body, and, if the patient is not etherized, a feeling of tension may then be relieved by depressing, with the hand upon the pubes, the suspensory ligament of the penis; an expedient also useful during the passage of the instrument.

My own practice has always been to etherize for lithotrixy.

Each operator prefers the position to which he is accustomed; and when the urethra is healthy, this is of very little importance. But if there be stricture or prostatic obstruction, a position at the patient's left side enables the operator to hold and direct the instrument to advantage with the right hand, leaving the left hand free to act in the perineum. After the instrument is introduced, and both hands are required above the pubes, they are most available, if the surgeon changes his position and stands upon the patient's right.

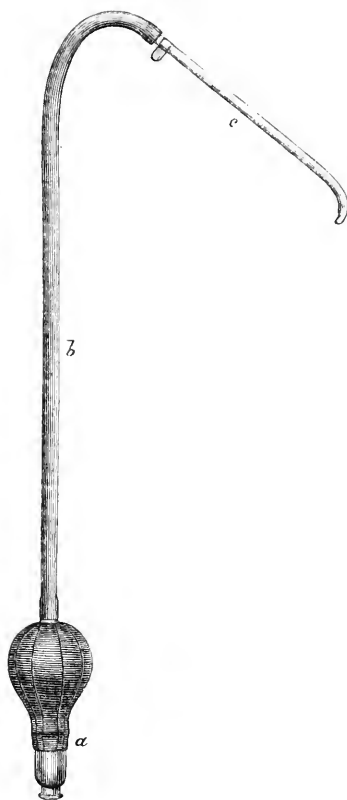
It is well, by a preliminary injection, to ascertain carefully the capacity of the bladder by emptying it and then refilling it slowly with warm water, previously measured, until the water is expelled through the loosely held urethra, by the side of the tube. In the etherized subject a short pipe or nozzle suffices for this purpose. I have for many years employed a common Davidson's syringe. An unetherized patient may for a moment resist this injection through a short tube, by contracting the sphincter of the bladder; but this readily yields. Except in a large bladder, a capacity of eight or ten ounces need not be increased. The smaller the injection, the more readily, indeed, do fragments fall into the blades of the instrument. But, unfortunately, so also does the mucous membrane. In fact, with too little fluid in the bladder, the use of a lithotrite in unpractised hands is attended with danger; and in a long sitting, an injection which will render the walls moderately tense is the only really safe way of keeping the bladder from between the blades. After careful examination of the action of a lithotrite through an opening in the summit of the bladder, I have returned to this opinion, which was held by the older writers on this subject. From time to time the diameter of the collapsing bladder should be estimated by carefully opening the blades of the lithotrite, and water should be introduced when necessary; but care should be taken not to injure a contracted bladder by first distending it, and afterwards adding to it the contents of the aspirating bottle.

A tape or an elastic band wound lightly once or twice around the penis retards the escape of injected water, and yet allows the movements of the tube or lithotrite.

In order to ascertain the maximum calibre of the urethra, before introducing a tube, it should be measured by an instrument which will enter more readily than the tube. Such instruments we have in Van Buren's sounds, which are slightly curved at the end, and a little conical. Being made of solid metal, and nickel-plated, they traverse the urethra with singular facility. Otis's sounds also answer admirably for this purpose.

EVACUATING INSTRUMENT. (Fig. 1.)—The following points are worthy of consideration in connection with any evacuating apparatus. The

Fig. 1.



Evacuating Apparatus. *a.* Elastic bulb and glass receptacle with brass cap, for debris. *b.* Rubber tube two feet in length. *c.* Evacuating tube of silver.

ten-ounce elastic bulb or bottle usually supplied with such an instrument is inadequate to the exhaustion for which it is designed. It will barely sustain, without collapse, a vertical column of water of the length of a catheter. A thicker flask fatigues the hand of the operator. The bulb is also an awkward weight at the top of the catheter. These difficulties are obviated by interposing between the catheter and bulb two feet of rubber tube, which relieves the bladder from the force of any movement of the apparatus, and, what is more important, allows the operator to hold the bulb on a level with the water in the bladder, or considerably below it. The exhaust then acts as a siphon, and readily draws off the water. The fragments gravitate to the bottom of the bulb, and may there be collected in a glass chamber. (See Fig. 1, *a.*) To prevent the possible return to the bladder of some single fragment while on its way to this receptacle, the rubber tube might be provided with a small glass trap containing a wiregauze or perforated tube, or valve, to deliver the current and strain it on its return.

The successful evacuation of the bladder depends upon several conditions, both in the apparatus and its use, which, for distinctness, may be enumerated separately.

1. *A large calibre of the evacuating tube.*
2. *Its shape.*
3. *The shape of its receiving extremity.*
4. *The assemblage of fragments around this extremity.*
5. *The immediate recognition and removal of any obstruction in the tube.*

1. *A large calibre of the evacuating tube.*—Whether or not we adopt the view of Otis, that the average capacity of the normal urethra is about 33 of Charrière, there can be no question that it will admit a much larger tube than that commonly attached to either Clover's or the French apparatus. The efficiency of the process of evacuation depends much upon using the largest tube the urethra will admit. This fact has been stated by Sir Henry Thompson. But he recommends for the glass cylinder or trap which is to admit this tube a "perforation at the end, the size of a No. 14 catheter," = 25 Charrière. (*Diseases of the Prostate*, 4th edition, 1873, p. 337.) This perforation is too small; and the tube which is designed to enter it is further reduced by its collar to the diameter of only 12, = 21 Charrière. In fact, this is the calibre of the evacuating catheters now attached to Clover's instrument, and is of itself fatal to their efficiency. An effective tube has a calibre of 28 to 31 or even 32 Charrière, and the meatus, which is the narrowest part, may, if necessary, be slit to admit it, if the urethra is otherwise capacious. Again, in the instrument, as sometimes constructed by Weiss, a joint is made by inserting an upper tube into a lower one, thus obstructing the calibre by a shoulder. The joints should become larger as the tube approaches the bottle, and the tube then delivers without difficulty fragments of its own calibre.

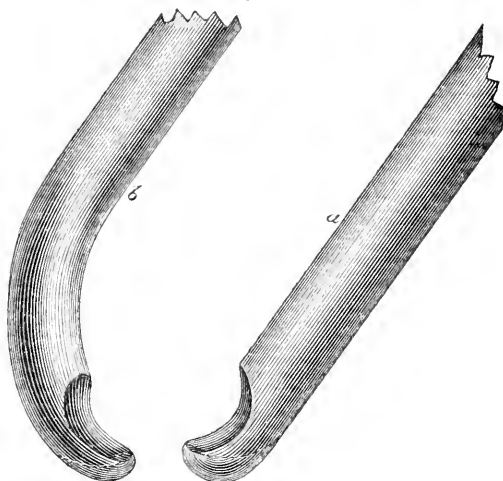
My tubes are of thin silver, of sizes 27, 28, 29, 30, and 31, *millière* Charrière, respectively.

2. *Shape of the tube.*—Works upon Lithotrixy enumerate and figure a variety of tubes through which fragments are to be aspirated. Many of these are useless. The best tube is either straight, or curved quite near the extremity; the latter to be used with the curve inverted and directed downward, the orifice then looking forward. (Fig. 2.)

3. *Shape of the receiving extremity.*—The receiving extremity should depress the bladder, and thus invite the fragments, while its orifice remains unobstructed by the mucous membrane. A fragment of stone, however light, if it lies at the distance of a half or even a quarter of an inch from the tube extremity, is not attracted by the usual exhaust of the expanding bottle, which requires that the fragment should lie almost in contact with the tube. A very slight obstacle impedes its entrance; and this fact renders inefficient all tubes like catheters, with orifices in the side or upper wall. Chips will not surmount their edge. Again, the orifice of a tube cut square is at once occluded by drawing in the vesical wall; while the spoon-shaped beak of the French instrument, made like the female blade

of a lithotrite, allows fragments to lie too far from the opening in the tube. The best orifice is at the side of the extremity, and is made by bending the tube at a sharp right angle, carefully rounding the elbow, and then

Fig. 2.



Evacuating Tubes, with unguiform extremity. *a*. Straight tube. *b*. Curved tube. The dotted lines show the inside floor. The tubes are here of a diameter 31 Charnière.

cutting off the bent branch close to the straight tube. (Fig. 2 *a*.) The tube is then practically straight; while its orifice, which is slightly oval, delivers a stream at an angle with it. The edge should be thickened and rounded so as to slide smoothly through the urethra, any rim inside the orifice should be masked by a false floor, but the calibre should be nowhere contracted. If the side walls of this orifice be removed a little, it gives an unguiform extremity to the tube, which is advantageous; and in introducing such a straight tube, this tip may be gently insinuated through the triangular ligament by rotation. If a couple of inches of the end of such a tube be bent, it may be inverted after introduction, and will bury itself in the floor of the bladder, which it depresses, while the orifice looks forward and is unobstructed. This form is quite efficient. (Fig. 2 *b*.) An effective instrument might also be made of a tube cut square at the end, if a disk convex outwardly, to repel the bladder, were attached to it, at the distance of a diameter, by a bit of stiff metal. When such an instrument is introduced, the interval may be filled by a rod. In fact, the orifice of the tube should be contrived with a view to its introduction. The French tube already spoken of, shaped like the female blade of a lithotrite, would be efficient, if it were made large enough—and provided also it were kept standing upon its heel in the bladder, with a shoe bent to make a precipitously inclined plane for the fragments. It would then offer a prolongation of the unguiform tip. But thus sharply bent, it would be

less easy to introduce. Whatever be added to the extremity of the tube, in order to facilitate its introduction or to repel the bladder, should not prevent the orifice from lying in the floor of the bladder at the apex of a steep inverted tunnel.

4. *The assemblage of fragments around the extremity.*—If the orifice of the tube be now placed among the fragments, it will be found that even a teaspoonful of water, lightly injected, shoots them to every part of the bladder, whence suction wholly fails to attract them, unless by chance. But if the compressed bottle be held motionless four or five seconds, the fragments gravitate to the lowest part of the bladder at the point where the extremity of the tube indents it. This artificial depression, which is made by very slight force, plays an important part both in crushing and evacuating the fragments. In placing the tube in a bed of fragments before each aspiration, there is opportunity for a little tact, as in discovering fragments with a lithotrite. The readiness with which fragments are thrown to a distance by an almost imperceptible compression of the bottle, the time required for their gravitation, and the difficulty of attracting them even at the distance of only a quarter of an inch, will hardly be appreciated without experiments outside the bladder.

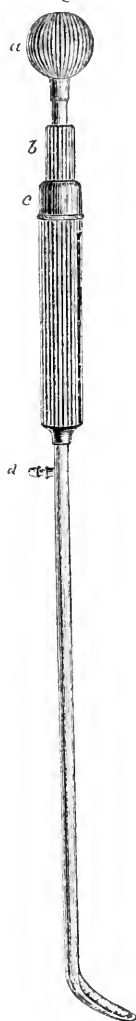
5. *The immediate recognition and removal of obstruction in the tube.*—There is but one usual source of obstruction to the exhaust, namely, too large a fragment at the orifice; and then even the powerful rack and pinion of the French syringe are of no avail. The obvious remedy is to expel the fragment by compression in the ordinary way. It is therefore essential to recognize its presence at once. Practically, during the whole process, I watch the expanding bottle while the dimple in its side is gradually effaced. If this dimple remains stationary for a moment, I know that a fragment obstructs the orifice, expel it without loss of time, allow the fragments to settle, and take my chance for another. With the lateral orifice described, and enough water to separate the walls of the bladder, there is little probability of obstruction by drawing in the mucous membrane, so long as the orifice looks upward; but if the orifice of the straight tube be rotated sideways, or to face the spine, the bladder at once plugs it. With the inverted curved tube, the bladder is less readily engaged.

After a dozen or two aspirations it may be found that all the fragments which can pass the tube have done so. By the usual method of crushing, the lithotrite would now again be introduced, and again be followed by the tube.

LITHOTRITE (Fig. 3.)—It would be plainly desirable, if it were easy, to crush the whole stone at once, before attempting to evacuate it; but this has hitherto been rarely possible. The lithotrite becomes so choked with impacted debris that the convex surface of the mass less readily receives additional fragments. A clean lithotrite always works to best advantage; and the operator frequently withdraws the loaded instrument, sometimes

with injury to the neck of the bladder, to evacuate it. It would be obviously better, if the instrument could be emptied at will in the bladder—especially if we distinctly recognize that what can be withdrawn in a lithotrite would come better through a tube, and that the only province of the lithotrite should be to pulverize, or indeed merely to comminute, and not to evacuate.

Fig. 3.



Although all lithotrites are made a little loose for the purpose of working out the debris, and although I have had one constructed with an especial device for this motion, I do not find it easy to clear the concave blade by

lateral movement of the male blade, chiefly because the impaction is so firm, that the dense mass, instead of yielding, twists the female blade from side to side. Nor does an instrument like that of Reliquet fulfil the indications. It discharges itself, indeed, as does the old fenestrated "lithoclast." But, as in all lithoclasts, its high sides are an obstacle to the approach of fragments. The male blade also of Reliquet's instrument is that of the lithoclast; and we need only close the blades between the thumb and finger to be satisfied of their scissor-like action upon the bladder.

The instrument about to be described keeps its blades clear, and secures certain other desirable ends relating to the injection of water, the lock, handle, etc.

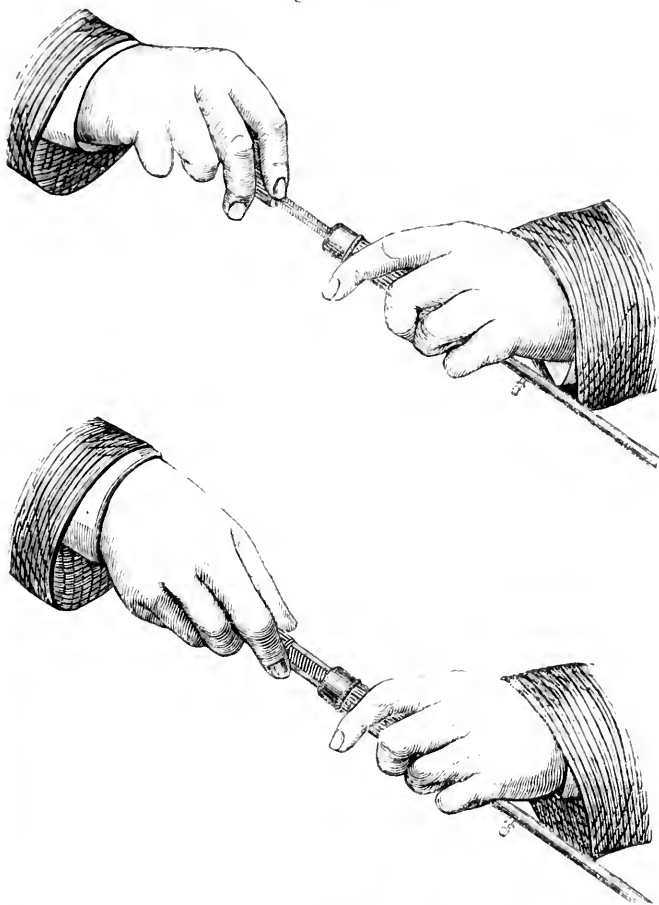
Lock. The general acceptance of the cylindrical handle of Thompson's instrument testifies to its convenience as a hold for the left hand. But it is always a little awkward to disengage the thumb of this hand, or in fact of either hand, in order to close the lock of a lithotrite at the critical moment of grasping the stone. This objection I have obviated, in closing the lock by rotation of the right wrist without displacement of the fingers. (Figs. 4 and 5.)

Wheel. In a protracted sitting, the wheel is an inconvenient handle; its chief merit being that it affords so insecure a grasp, that the operator is supposed to be unable, with its prescribed radius, to break the blades. But in a larger instrument these blades are stronger, and a ball may be substituted for the wheel.

Lithotrite by Collin & Cie., from a working model. *a.* Ball which turns the screw. *b.* Revolving cylinder-handle attached to the screw-guard, which also revolves. This guard consists of two square or T-shaped rods. They slide through notches in the cap of the lock. By their revolution the cylinder-handle turns the cap and operates upon the lock. *c.* Cap of the lock, which by its revolution wedges up the screws. *d.* Injecting pipe communicating with the blades.

Injecting tube. If the sitting be protracted, as proposed, the water dribbles away; and the collapsing bladder, especially if trabeculated, is liable to serious damage from the lithotrite. To meet this difficulty, my lithotrite contains a tube or groove between the blades, for the injection of water without removal. (Fig. 3 *d*.) I formerly injected water by means of a short flat tube inserted into the urethra from time to time, by the side of the lithotrite.

Figs. 4 and 5.

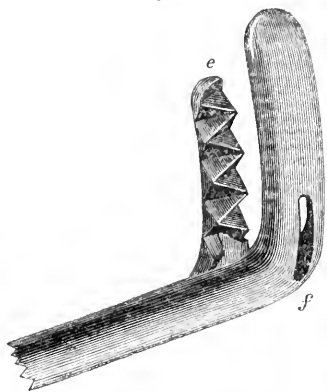


Position of the hands in holding and locking the Lithotrite. FIG. 4. Lithotrite unlocked. FIG. 5. Lithotrite locked by a quarter rotation of the right wrist.

Blades. The blades of this lithotrite consist of a shoe, or female blade, the sides of which are so low that a fragment readily falls upon it; while the male blade, or stamp, offers a series of alternate triangular notches by whose inclined planes the detritus escapes laterally after being crushed against the floor and rim of the shoe. At the heel of the shoe, where

most of the stone is usually comminuted, and where the impact is therefore greatest, the floor is high and discharges itself laterally, while its

Fig. 6.



e. Male blade, presenting, on alternate sides, triangular notches. The small portion of debris not discharged laterally by these notches is driven through the slot in the female blade. *f.* Slot in the female blade.

customary slot (Fig. 6 *f*) is made to work effectively. It may be unnecessary to say that the female blade of the common lithotrite, when drawn from a flat plate, as in the French instrument, has a disadvantageous cavity at the heel, where the greatest impaction occurs by gravitation.

One of the dangers of lithotripsy, which has been already emphasized, is the liability of the bladder to be nipped in the instrument. In view of the character of many of the instruments sold, we might expect to hear more of this accident, although indeed it is a quiet one. It cannot be too carefully provided against, not only by skill in the operator, but also in the construction of the instrument; especially during a protracted operation, while water is escaping and the bladder collapsing. With this object, the shoe is here wider and longer than is usual, to repel the vesical walls. (Fig. 6 *f*.)

It can hardly be doubted, that, in practice, dexterous operators secure most stones and fragments as they gravitate into the female blade while it depresses the floor of the bladder, perhaps a little to one side or the other, where the stone is felt. A similar and efficient manœuvre, especially for a small fragment, is that of opening the blades of the lithotrite widely in the vertical position, then slowly turning them to one side and closing them along the floor of the bladder. If, in attempting this, the instrument be opened after it is turned, the male blade displaces the fragment without securing it; and it is of course understood, that, in opening the lithotrite, the blade in contact with the bladder, commonly the female blade, is stationary. The inverted lithotrite works efficiently in a depression, if the bladder be kept out of harm's way by a special device; but with the common lithotrite it is important to turn the blades up before crushing, and move them, in order to be sure they are free. In the exceptional case of a stone behind the prostate, it may be necessary to invert the lithotrite and seek it. Fragments, however, are readily washed from this region within reach of the evacuating tube, by occasionally turning the orifice and directing the stream from the tube upon them.

While many years ago I had not unfrequently prolonged lithotripsy to ten or fifteen minutes, and longer, it is only within two years that I have aimed at the evacuation of a considerable stone during a single sitting; and al-

though long experience will perhaps be necessary to determine precisely what cases are unfavourable to such an operation, there can now be no question that it is practicable to remove at once a far greater quantity of debris than has hitherto been considered possible. The conditions least favourable to lithotrity are obviously least favourable to this modification of it—a stone neither very large nor hard, and especially a large urethra, promising its best results. But if the preceding views are correct, the future of lithotrity lies in the direction of a fast-working lithotrite, which, while it effectually protects the bladder, is more powerful than the usual instrument, and better proportioned to the work it is to do—a rapid comminution of the stone—its immediate and complete evacuation by means of a large tube with an efficient orifice, while the fragments are gathered to a spot where they can be aspirated, and the ready recognition and removal of any obstruction which delays the process of aspiration. It will be no longer essential to pulverize the stone, but only to comminute it; and if, in so doing, the lithotrite can be kept free from impaction, the process will be more rapid and efficient.

During the last year I removed by lithotomy two soft stones, weighing 1272 and 1230 grains, from two male adults aged 40 and 24 years respectively, who recovered after various risks. I now cannot but think, that, with a tolerably sound bladder, a urethra of good size, a large lithotrite, and a large tube, the operation could have been performed with less risk by lithotrity.

We get a useful view of the interior of the bladder by examining it in position, through an opening in its summit. This part of the organ, and the free and thin posterior wall, are mainly concerned in distension. The floor of the bladder is comparatively firm and flat, and, if the subject be in good condition, adheres to a thick mass of cellular tissue in and near the ischio-rectal fossa, upon which it rests. This mass is traversed by the rectum variously distended; and this canal, in a thin subject, may be advantageously filled with air during an operation, to facilitate its indentation by an instrument; reversing, for the operation of lithotrity, one of the precepts of lithotomy.

The sigmoid flexure is largely concerned in compressing the bladder behind. The posterior wall of this viscus may be so crowded by the intestines that it becomes flat or even concave. A horizontal section of the bladder is then transversely oval, flattened between the intestines behind and the pubes in front, each of these indenting it. A well-filled or tense abdomen tends so to shorten the antero-posterior diameter of the bladder, that, while a large stone may gravitate backward into that part of the bladder which is compressed by the intestines, carrying the thin wall with it, it is not so with a small fragment, which, unless the floor be artificially depressed, may lie on one side or the other of the vesical orifice more readily than at a considerable distance behind it. So in sounding with a

curved sound, it may sometimes be a little difficult to move the instrument back and forth in the urethra, when its extremity may be readily turned down upon the floor of the bladder on either side. It is seen also (see Figs. 7 to 11), as a result of this conformation, that a lithotrite or straight

Figs. 7 to 11. Plaster casts of bladders variously distended, and holding instruments, to show the effect of a slight pressure in indenting the floor of the bladder, in order to facilitate the approach of fragments. The dotted line near the summit of each represents the level of an air cavity, which makes it possible to place the cast in the exact position it occupied in the horizontal subject.

Fig. 7.

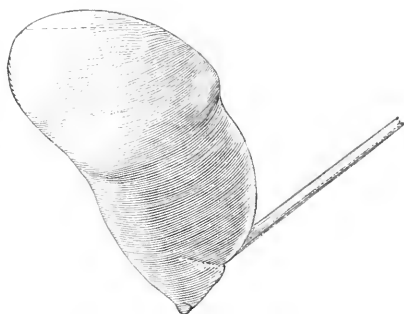
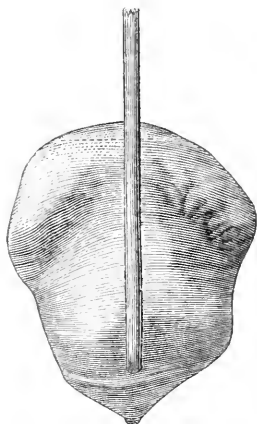


Fig. 7a.



Figs. 7 and 7a. Side and front view of a distended bladder of singular symmetry. The original suggests the torso of a Silenus: the pectoral pouches overhanging the pubes; the abdomen beneath the symphysis; while the hollow loins were cushioned on the sigmoid flexure which indented them. The extremity of a curved tube is seen below, at the apex of an inverted tunnel: and just above it, a trace of the vesical valve.

Fig. 8.

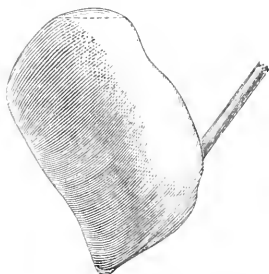
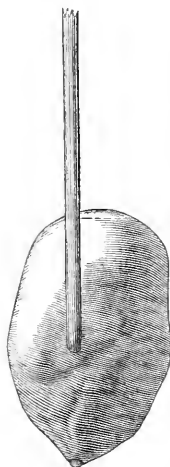


Fig. 8a.



Figs. 8 and 8a. A less distended bladder, containing a straight tube which indents the posterior wall.

Fig. 9.

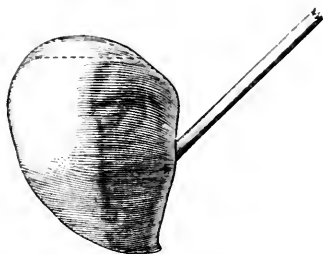
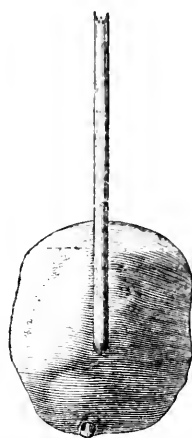


Fig. 9a.



Figs. 9 and 9a. A bladder with a curved tube brought forward so as to indent the floor behind the prostate.

Fig. 10.

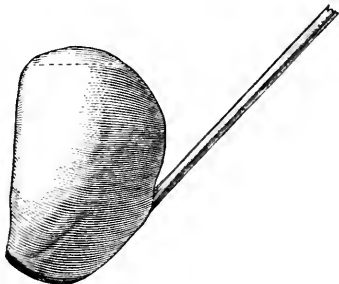
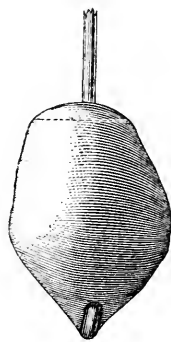


Fig. 10a.

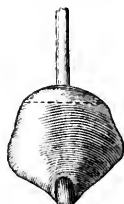


Figs. 10 and 10a. A bladder containing a large lithotrity, which has so depressed and extended the floor that the posterior wall rises perpendicularly.

Fig. 11.



Fig. 11a.



Figs. 11 and 11a. A bladder with a very small injection, imprisoning a lithotrity.

tube, standing at an angle of 45° with the recumbent body, abruptly buries its extremity in the floor of the bladder near the foot of the posterior wall, which then becomes more upright, and does not lie upon the centre of an extended concave surface, as it is sometimes represented. The deep pit at the extremity of the straight tube, and the similar depression made further forward by the curved and inverted tube (see Fig. 9), show how readily fragments can be made to gravitate to the tube orifice, provided the latter be not plugged by the mucous membrane. The curved tube, when inverted, rests on the adherent floor; but the straight tube, bearing upon the free and thin posterior wall (Fig. 8), should not be urged too forcibly against it. In either case, the nearer the instrument approaches a vertical position, the deeper will be the indentation. A pit of this sort, formed in the elastic floor by an almost insensible pressure of the instrument, explains the observation of Thompson, that, when a fragment is caught by the lithotrite, many more are likely to be caught, like fish, in the same spot. A central indentation of the floor also explains how, in certain cases of large stone, a lithotrite may be passed back and forth beneath it without touching it, unless the beak is tilted up. The stone may then seem to adhere to the upper wall of the bladder, and to be suspended from it.

CASE I.—Dec. 14, 1875. Age, 64. Date of symptoms, six years. Two or three stones, measuring from half an inch to more than three-quarters. Three sittings. First sitting: No fragments were removed through a tube. Second sitting: Interval, seven days; duration, forty-five minutes, under ether; quantity removed, "a large mass of fragments;" size of tube, twenty-seven. Third sitting: Interval, twelve days; quantity removed, "a few fragments." Result: The patient was discharged well, one week after.

CASE II.—May 15, 1876. Age, 60. Date of symptoms, twenty years. Two stones, of one and one-half inches and three-quarters of an inch diameter, respectively. One sitting: duration, one hour and a half, under ether; lithotrite introduced three times; quantity removed, one hundred and sixty-seven grains; size of tube, twenty-nine; there was afterwards a slight cystitis; no fragments were passed; in two weeks the patient was again sounded, and no fragments were found. Result: Discharged well.

CASE III.—Aug. 6, 1876. Age, 62. Date of symptoms, eighteen months. Several stones, none larger than three-quarters of an inch. The patient was confined to the house, in great pain, drawing his water every half hour or less. The prostate was unusually large. One sitting: duration, about one hour and three-quarters, under ether; size of tube, twenty-nine. He afterwards passed a few grains of sand only. Result: No unfavourable symptoms; almost entire relief from pain. Later, no difficulty in retaining water, but continues to pass catheter; gained flesh and former health, and resumed avocation.

CASE IV.—Dec. 14, 1876. Age, 66. Date of symptoms, two years. Single stone. One sitting: duration, about an hour, under ether; quantity removed, one hundred and eleven grains; size of tube, twenty-eight. Result: The patient did well for two days; then there was a

chill, with higher temperature; pain in the back, and pain referred to the left hip; a gradually failing pulse; moderate meteorism, with but little tenderness; death on the sixth day. An autopsy was not permitted.

CASE V.—Jan. 8, 1877. Age, 55. Date of symptoms, one year. Single stone. A severe chill followed the primary examination. Seven days after, the meatus was incised and enlarged from 28 to 31 Charrière. Diameters of stone, ten to twenty millimetres. One sitting; duration, one hour, under ether; size of tube, thirty-one. Result: No sand nor fragments were afterwards passed; nor were there any subsequent symptoms.

CASE VI.—April 21, 1877. Age, 43. Single stone. Necrosis. Five years ago the pelvis of this patient was crushed. Sinuses, discharging dead bone, opened on both hips. Six months after the injury, symptoms of stone existed. One sitting; duration, one hour and a half, under ether; meatus incised; size of tube, thirty; quantity removed, sixty-six grains, and also three small pieces of bone, doubtless nuclei, one of which was incrustated. An indurated spot was detected by the tube, where the bladder seemed to adhere to the pelvis. Four days after, under ether, the lithotrite brought away with difficulty, through the urethra, a square scale of bone, too elastic to be broken, measuring five-eighths of an inch by seven-sixteenths, but neither sand nor fragments. Result: There were no unpleasant symptoms at any time; and, after another careful examination for bone, the patient was discharged well.

CASE VII.—(Dr. T. B. Curtis's case) March 6, 1877. Age, 54. Date of symptoms, two years. Single stone. One sitting; diameter of stone, one inch and a quarter; duration, one hour and twenty-five minutes, under ether; lithotrite introduced three times; size of tube, thirty-one; quantity removed, when dry, two hundred and fifty-seven grains; the six largest fragments weighed together twenty-four grains; the strained urine yielded during the next week two and one-half grains. Result: Rapid recovery, with no subsequent symptoms.

CASE VIII.—(Dr. C. B. Porter's case) Aug. 19, 1877. Age, 61. A large, flabby man, with a feeble pulse. Date of symptoms, twenty-six years. Two stones, one of which is so large that it is barely possible to lock the lithotrite. Passes water every fifteen or twenty minutes. Three sittings. First sitting: Duration, one hour and a half, under ether; size of tube, twenty-eight; quantity removed, two hundred and twenty-eight grains; passed afterwards one hundred and eight grains. Second sitting: Interval, four days; duration, three hours, under ether; size of tube, thirty; quantity removed, seven hundred and forty-four grains; passed afterwards sixteen grains. No after symptoms of importance. Third sitting: Interval, five days; duration, three and three-quarters hours, under ether; size of tube, thirty-one; quantity removed, seven hundred and six grains; no pain nor discomfort afterwards; total number of grains after drying, one thousand eight hundred and two. Result: Discharged well, two weeks from the date of the first operation. After a few weeks the patient could retain his water from three to four hours.

REMARKS.—The details of the earlier of these operations are expressed with less exactness than I might now desire, but were dictated by myself at the time, and are within the fact, as to the duration of each operation, and the size of the stones. These cases, all of soft stones (*i. e.*, not oxa-

late of lime), are the only ones by which the method which is the subject of this paper has been tested. As statistics, they are not so numerous as to have importance. The fatal case, without an autopsy, a circumstance I greatly regretted, must pass for what it is worth. The other cases abundantly illustrate what this operation is able to accomplish in removing at once a large quantity of stone by the urethra, and demonstrate a tolerance by the bladder of protracted manipulation which has not hitherto been recognized.

ARTICLE XI.

CASE OF DISLOCATION OF THE HIP UPWARDS AND FORWARDS ON THE PUBES, OF TWENTY-SIX DAYS' STANDING, SUCCESSFULLY REDUCED: FOLLOWED BY COMPLETE RECOVERY. By M. H. HENRY, M.A., M.D., Surgeon-in-Chief of the State Emigrant Hospitals, Ward's Island, New York, etc. etc.

CASE.—Joseph P., Alsathian, aged 19, height six feet two and a half inches, well developed and muscular, admitted in the surgical division of the State Emigrant Hospital on the evening of the 17th of October, 1873. He furnishes the following history of his injury: On the 3d inst. he fell from a tree—a distance of eighteen or twenty feet—to the ground, striking, as he believes, first on his feet, then tumbling across a log, receiving a severe blow on or near the trochanter of the left side. He was taken home on a stretcher, but did not remain in bed beyond the second day. Being unable to perform any labour, he entered the hospital. He could, at this time, walk without much difficulty. From the description of his injury, which he gave on entering the hospital, it was thought by the house-surgeon to be little more than a severe contusion, and a careful examination was not made until several days after his entrance, when a dislocation of the head of the femur on the pubes was discovered.

The limb was shortened, but not to any great extent—scarcely an inch; slightly flexed, abducted, and everted. The head of the femur could be plainly seen, as well as felt, resting on the margin of the horizontal ramus of the pubes, on the outer side of the femoral vessels. There was some depression along the outer aspect of the thigh, and additional prominence over and in the region of the gluteal muscles. There was decided immobility of the limb—flexion being exceedingly limited and difficult.

Oct. 23d. The patient was placed under the influence of ether, and assisted by my friend, Dr. Thomas T. Sabine, and the resident staff of the hospital, I attempted reduction. The limb was very rigid, and the efforts at flexion, adduction, abduction, or circumduction, for a time met with very limited success. By continuing the movements, together with extension, the false adhesions, which were very complete and strong, were finally broken up. The mobility of the joint was somewhat increased, but, as the patient had then been under the influence of ether for some time, the rigidity of the surrounding parts being still very great, and from fear of exciting severe inflammation by further efforts at this time, it was deemed

advisable to allow the patient to recover from the effects of the steps thus far taken.

The patient was placed in bed, and ice-bags applied over the surface of the dislocated parts, and the limb well extended. He remained in the recumbent posture at perfect ease until Oct. 29, when I decided to make another attempt to reduce the dislocation. The injury was one of so much interest that I called the attention of my friends, Drs. Thomas M. Markoe, H. B. Sands, George A. Peters, Thomas T. Sabine, and A. B. Crosby, to the case, and they all very kindly came to my assistance. The patient was etherized and a number of expedients resorted to without any benefit, until the limb was strongly abducted and made to describe an arc of a circle on a level with the patient's body, a counter-force being exerted downward and outward by a strong broad band applied around the thigh close to the pelvis. The head of the bone was now moved firmly, steadily, and slowly downwards toward and into the thyroid foramen. The dislocation was then reduced by strong adduction, combined with extension, and the limb resumed its normal position, twenty-six days after the injury.

The patient was removed to his bed, and the limbs secured together by bandages. He was kept perfectly quiet. Cold applications were applied to the upper part of the thigh. On fully recovering from the effects of the ether he was very much depressed, and stimulants were given, and continued, to some extent, until his complete recovery.

30th. Patient passed a good night. The thigh is very much swollen and discoloured. There is but little pain. From this time the patient made a steady and gradual recovery. He was placed on a liberal diet, and at the end of two weeks from the time the dislocation was reduced, the limb assumed in all its aspects, while in a recumbent posture, a normal appearance.

Nov. 25th. Passive motion was commenced. The movements of the joint were restricted by what seemed to be an organized infiltration among the muscles. The restriction soon yielded to the daily efforts of motion, which were pursued for several weeks. In the early part of January, 1874, he could walk with perfect ease and comfort, and the only feature left to remind him of his injury was a slight awkwardness in assuming a sitting posture, which was due to the difficulty of controlling the required extent of flexion of the joints.

Jan. 21th, 1874. Patient was discharged cured, and went to South Carolina to do laborious work.

I regard this case as one of interest for many reasons, mainly, however, on account of the rarity of this form of dislocation and the time that elapsed from the period of the injury until the dislocation was reduced. There is also additional interest attached to the case from the difficulties experienced in the reduction, and the subsequent complete recovery. I should have published these particulars at an earlier day, had I not intended incorporating them in a more extended article on dislocations in the region of the pelvis. As my engagements have prevented me from pursuing my original intentions, I have deemed it advisable not to delay any longer its publication. It is, as far as I am aware, the only case of successful reduction of this form of dislocation after so long a period—twenty-

six days. Follin¹ states that there is no case on record of this form of luxation in which reduction has been effected beyond the eighth day. This was Bloxam's case, referred to by Holthouse,² published originally in the *Gazette Médicale*, 1833, p. 660. Much of the interest attached to my case lies in the complete recovery of the adjacent parts, for they were, without any doubt, very seriously impinged upon and subjected to some necessary violence in the efforts at reduction.

157 WEST THIRTY-FOURTH STREET, NEW YORK.

ARTICLE XII.

EPITHELIOMA LARYNGIS; FINAL REMOVAL BY LARYNGO-THYROTOMY.

By S. H. CHAPMAN, A.M., M.D., of New Haven, Conn.

IN April, 1876, a lady, Mrs. A., was sent to me for diagnosis of an obscure affection of the air-passages. Twelve months previous to this, her first appearance, Mrs. A. began to suffer from cough and hoarseness, and tried change of climate for relief, but without benefit.

These symptoms increased steadily, and at the end of six months were supplemented by slight dyspnea, which was followed, shortly after, by pain in the neck, at first slight and intermittent, but latterly continuous, severe, darting. This pain affected the right side of the neck more than the left. With the accession of pain came also another symptom, namely, a sense of fulness and stiffness about the neck, as if the muscles were swollen. During the month previous to her first visit, the cough had increased in severity and become paroxysmal in type, and the dyspnea had so far increased as to render the patient uncomfortable and unable to exercise freely.

Once during this month, after a severe paroxysm of cough, a small hard nodule was dislodged from the throat, after which both cough and dyspnea were considerably less. During the entire year of illness, beyond metrorrhagia of slight extent, the general health remained good.

Previous to this time the patient was in good health, had borne children, all of whom are living and healthy, the youngest being seven years old. Her age at time of first visit was 35 years; figure short, thickset, face florid, complexion clear and healthy. The chest was well-developed, and the lungs healthy; the neck was very short and thick; the respiratory act produced a slight oscillatory motion in the larynx. Pressure upon the larynx and sides of the neck produced no pain whatever. My questions were answered in a hoarse loud whisper, interrupted by a hard, short, dry cough.

Upon examination, the pharyngeal space seemed to be much contracted in size by a uniform infiltration of the pharyngeal walls, was sensitive and also painful to the touch. For this reason, although the tonsils were not

¹ Pathologie Externe, vol. iii, p. 360.

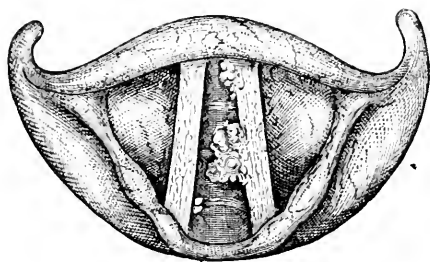
² Injuries of the Lower Extremity, Holmes's System of Surgery, 2d edition, vol. ii, p. 912.

enlarged, it was necessary to use a small-sized mirror in the laryngoscopic examination. This examination was made with much difficulty, on account of not only the small size and extreme irritability of the pharynx, but also the prone position of the epiglottis, and the paroxysms of cough induced by contact of the mirror with the walls of the pharynx.

The epiglottis and larynx were thickened, and in the condition of chronic inflammation observed of the pharynx. Both vocal cords were deeply congested and slightly thickened, and were the seat of three abnormal growths. Near the posterior insertion of the left vocal cord, attached to its inferior surface near the edge, was situated a small nodule the size of a millet-seed. The edge and a portion of the upper surface of the middle third of the right vocal cord were occupied by a cauliflower growth, springing from a broad base, sufficiently pendulous to move up and down during respiration, and about the size of a pea. To the border of the anterior fourth of the right vocal cord was attached another and similar but smaller growth. These growths were grayish-white in color, felt hard to the touch, and bled readily. Nothing abnormal was recognized as regards the shape of the larynx or the co-ordinate action of its muscles.

In Fig. 1, this primary condition is represented. This and the other figures are above life size, and the rima glottidis is partly open.

Fig. 1.



The treatment was begun in the usual manner by an attempt to overcome the pharyngeal and laryngeal irritability by daily use of the mirror and bongie; but at the end of a month this condition had not improved; in fact it was decidedly worse, notwithstanding that treatment by means of inhaler and astringent spray had been carefully used. In addition to this, the cervical pain increased in severity and the tumour rapidly enlarged. Hence it was determined to proceed at once to operation. An attempt was made to produce local anaesthesia by pencilling the larynx in the following manner.

Six applications were made at a single sitting, with a solution of acetate of morphia, six grains to the drachm, followed by twelve of chloroform, with no local and but slight general anaesthesia as a result. Sixteen hours thereafter, twelve applications of the morphia solution, and twenty-four of chloroform were made during a period of two hours, with no local anaesthesia produced, until the general anaesthesia became too profound for operation.

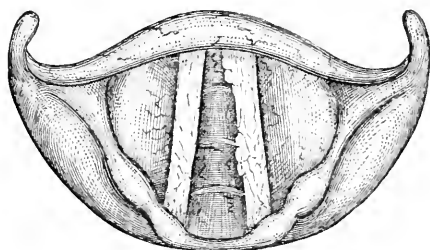
This plan was therefore abandoned and the more successful one adopted of fatiguing the laryngeal and pharyngeal muscles by repeated use of a good sized bongie, until a point was reached where all spasmodic action ceased. This process required a period of about three hours, during which

the bougie was introduced several hundred times. Within a week after this plan was adopted the tumours were extirpated to their bases and the latter severely cauterized.

My excuse for giving so minute a description of the operation is that the case is unique in the difficulty experienced in overcoming the irritability and in the method adopted.

Fig. 2 represents the condition after completion of the operation. The operation increased the cervical pain and produced slight œdema glottidis, which yielded readily to inhalations of vapour of benzoin. The conscious and permanent results of the operation were relief from cough, dyspnoea, and pain, and change of voice from a hoarse whisper to a rough, loud baritone.

Fig. 2.



Microscopical examination of the growths disclosed the characteristic nests of the epitheliomatous variety of cancer. This diagnosis was verified by two other competent observers.

On my return to the city in September, the patient presented herself again, after an interval of six weeks, presenting all the symptoms previously described and in severer form. The tumour of the left vocal cord had not returned, but those of the right had not only returned but had increased beyond their former size.

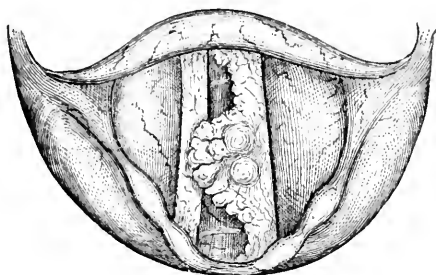
Laryngeal and pharyngeal infiltration had also increased, and with it more acute irritability. From this time until the middle of November, repeated attempts by the methods before described were made to completely extirpate the newly-formed tumours; but, although many times the original mass was removed, the rapidity of growth was so much greater than that of removal, and the sympathetic inflammation of surrounding tissues became so extensive, that operation by the mouth was reluctantly abandoned.

On November 25, 1876, on account of alarming dyspnoea, laryngotomy was performed. The operation was entirely finished in the space of two minutes, because of the use of the admirable Fuller's tracheotomy tube, consisting of a bivalve enclosing a closed tube.

The bivalve was first removed from the enclosed tube, the tissues overlying the crico-thyroid space were divided with a bistoury, the crico-thyroid membrane was divided with a single stroke; the bivalve, pressed so that the points came together forming a wedge, was passed through the slit thus made, and the inner tube forced into place through the bivalve. Thus the crico-thyroid membrane was pressed apart, and prevented, by close apposition with the tube, any hemorrhage from entering the trachea. The patient remained in an atmosphere impregnated with vapor of benzoin for two days, and on the third day was about her house as usual.

Fig. 3 represents the condition immediately preceding the operation. Two weeks later the operation of laryngo-thyrotomy was performed for removal of the abnormal growths. Ether was given, and with good effect, through the tracheotomy tube; as soon as the patient was well anesthetized, the tube was withdrawn, the opening enlarged upwards to the level and to the right side of the tubercle of the epiglottis, the ala of the thyroid cartilage were separated by lateral pressure, so much as was necessary for fully displaying the abnormal growths, and these, together with the right

Fig. 3.

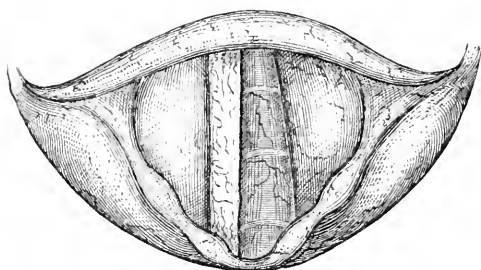


vocal cord were then removed with strong forceps. Hemorrhage gave some trouble during the operation, and obliged a suspension of it occasionally, in order that by turning the patient over with head downwards, the large tubes might become emptied of blood. After completion of the operation a Fuller's tube of the size No. 30, French scale, was introduced, and the patient put to bed in an atmosphere of benzoin vapor. The only untoward circumstance attending the operation was the premature occurrence, during operation, of menstruation, which to some degree weakened the patient. For some days following the operation the tube became rapidly occluded with muco-purulent discharge, the respiration was slightly accelerated, mucous râles could be heard over the entire chest, the temperature was raised one degree and a half, and the pain and stiffness of the neck were greatly aggravated. By the middle of January, however, these symptoms having entirely disappeared, the seat of the extirpated tissue was thoroughly cauterized with chloride of zinc, the cauterization being repeated four times at intervals of two days, the patient using meanwhile an inhaler with tinct. benzoin and ether. Laryngoscopical examination at this time showed that the growth and right vocal cord had been thoroughly extirpated, that the false vocal cord of the right side was much tumefied, and that the left side of the larynx, beyond some congestion, appeared to be healthy. The general health at this time was entirely restored, the patient following her usual avocations, and expressing herself as much gratified at her freedom from all suffering.

For some weeks after the operation the patient was able to speak in a loud and rather clear voice, owing to the tumefaction of the right false vocal cord which compensated for the loss of the true cord; but this capability was gradually lost as the tumefaction diminished, and the voice returned to a dull, monotonous, loud whisper. During April, when the patient again presented herself, no return of the disease was recognizable by laryngoscopical examination, but the tube was allowed to remain for fear of its recurrence.

Fig. 4 represents the condition at this time. In June a small growth appeared on the anterior third of the right laryngeal surface, which was removed by forceps, and the base touched with zinc chloride. This growth did not show by microscopical examination the appearance of epithelioma, but that of mucous polypus. Again, in July, the growth of June started up afresh and was severely cauterized.

Fig. 4.



On September 26, the date of the last examination, no appearance of disease could be detected beyond slight thickening of the tubercle of the epiglottis.

There seems to be some probability, however, of the recurrence of the disease, and hence the tracheotomy tube is allowed to remain *in situ*.

ARTICLE XIII.

BROMIDE OF POTASSIUM IN THE UNCONTROLLABLE VOMITING OF PREGNANCY. By SAMUEL C. BUSEY, M.D., Washington, D. C., President of the Medical Society of the District of Columbia.

As it is my purpose simply to set forth the utility of the potassium bromide in the treatment of this obstinate, but, fortunately, rare complication of pregnancy, I will not undertake any comparison of the relative merits of the numerous agents which have been recommended by their respective advocates. In the accomplishment of this object I am fortunate enough to possess the memoranda of two cases prepared by competent and impartial observers, to which cases I was called through their kindness and partiality. The first case occurred in the practice of my friend, Dr. P. J. Murphy.

CASE I. — Mrs. McC., white, aged 28, a very stout and robust married lady, never had been pregnant, though married for five years, suffered a great deal at her menstrual periods from pain in the back and lower part of abdomen, flow always scanty, lasting usually but one day, very nervous and excitable. After treatment of several months the above symptoms were relieved, and she became pregnant in the spring of 1874. Two weeks subsequent to the date at which the menses should have occurred, profuse

salivation ensued, several dozen handkerchiefs being required during the twenty-four hours; there was obstinate constipation, relieved temporarily by enemata, constant vomiting, the simplest nutriment being ejected. The various remedies recommended in such cases were tried, oxalate of cerium, minute doses of calomel, effervescing nitrate of cerium, iced champagne, etc., but to no purpose. My patient becoming alarmingly prostrated, I called to my assistance Dr. Busey, who ordered drachm doses of potass. bromide in two tablespoonfuls of beef-tea, injected per rectum, every four hours. This treatment completely arrested the vomiting in a few days, and with it all the nervous phenomena passed away. Mrs. McC. was now in the fifth month of pregnancy, and enjoyed comparatively good health until towards the close of the sixth month of pregnancy, when she aborted, the abortion arising partly from her debilitated condition and partly from undue excitement on hearing of sudden bad news."

To the above notes Dr. Murphy is kind enough to append the following history of the second pregnancy of the same lady:—

"In the summer of 1876 she again became pregnant, and the same phenomena which accompanied her first gestation were again observable. She was then under the care of an eminent physician in New Jersey, and her condition became such that I was telegraphed for, her friends supposing her to be in a dying condition.

"The physician in attendance had exhausted all his resources, and had called in another to assist him. When I arrived her condition was very critical, pulse small and thready, 120 per minute, great restlessness, skin hot, tongue dry, brown, and furred, great pain over epigastrium, and all the symptoms accompanying great exhaustion.

"I recommended the treatment pursued with such success in her former sickness, and left, asking to be informed of the result.

"Almost immediately after the third injection she was relieved. Mrs. McC. went to full term, and I had the pleasure of delivering her of a fine healthy female child."

The second case exhibits more markedly the salutary effects of the potassium bromide. It occurred in the practice of Dr. Mackall, whose extensive experience and accurate observation entitle his opinion to the highest consideration. The following extract from a letter from him furnishes the preliminary details of the case:—

CASE II. "Mrs. E.'s husband consulted me in my office about the 25th of April, 1877, with reference to her condition. He stated that his wife was three or three and a half months pregnant with her first child, and had been free from nausea and vomiting until a few days prior to his seeing me; but that these symptoms had suddenly become marked and distressing. As she declared that she would not see a physician, he thought it best that I should prescribe without visiting her. Accordingly I directed some simple medicine (I think, trisnit. of bismuth). On the following day I learned that the medicine had afforded no relief. It was, therefore, discontinued, and oxalate of cerium substituted. This also failed, and, from the description of her condition, I felt that her wish not to see a physician should be no longer regarded. On visiting her I found her very ill; pulse barely perceptible, extreme restlessness, extremities cold, vomiting incessantly. During the night and morning she had repeatedly ejected blood, and was still now and then vomiting it up in quantities of a table-

spoonful or more. The tip and sides of the tongue were red and glazed. Great tenderness on pressure over the epigastrium. She had not slept, nor retained a particle of food for two days.

• During the next twenty-four hours there was no recurrence of the hæmatemesis, but otherwise her condition remained unchanged, although every means that suggested itself was faithfully tried.

• Another day passed without improvement. No medicine, no form of nutriment could be retained by the stomach (her only support was by means of nutritive and stimulating enemata). A blister applied over the pit of her stomach, morphia injected hypodermically, starch, and laudanum enemata and other measures failed in accomplishing material benefit. A vaginal examination being made, marked ante flexion of the womb with enlargement and tenderness of the fundus was revealed. I now requested her friends, who had been previously apprised of her danger, to have you called in consultation, and you are familiar with its subsequent history. I will leave to you the further description of the case, together with the treatment adopted. In conclusion, however, I desire to express my conviction that the large enemata of bromide of potash, which you suggested, were mainly instrumental in relieving the gastric irritability. I would also state that when the nausea and vomiting were arrested, they ceased, I may say, abruptly, and did not again recur, except for a few hours once or twice several weeks after her convalescence.

• Further, to show to what extent the patient had been reduced, I mention the fact that she could not be even raised up in bed for about four weeks, and six weeks or more elapsed before she could be lifted into a chair for a few moments.

• I saw Mrs. E. this morning; she is now perfectly well, and for several months has been free from any unpleasant symptoms."

In addition to the symptoms enumerated by Dr. Mackall, there were present at the time of my first visit great tremulousness followed by sinking, which came on in paroxysms, usually occurring when any person unexpectedly approached her bedside, or when any effort to move was made. The pulse was barely, if at all, perceptible, the surface was cold, capillary circulation very languid, voice very feeble, and, when any attempt was made to speak, retching immediately ensued. Her expression was anxious and distressed. Forty grains of the potassium bromide dissolved in a mixture of one ounce of beef-tea and a half ounce of brandy, to which were added ten drops of laudanum, were ordered to be administered per anum every four hours. The stomach to remain at rest, nothing whatever to be given per os until further orders. The beneficial effects were manifest after the third enema, and, when 480 grains of the bromide had been administered, the nausea and vomiting had entirely ceased. After the first twenty-four hours the interval between the enemata was lengthened, and she was allowed to take nutriment in very small quantities at short intervals by the mouth. Even after the discontinuance of the nausea and vomiting, and suspension of the bromide and nutritive enemata, the alarming prostration was so persistent, notwithstanding the ingestion of what seemed to be an adequate amount of nutriment and stimulants by the mouth, that the propriety of induction of abortion was entertained and discussed. During this period, which continued several days, the brain seemed overwhelmed by the exhaustion, even though the heart had regained in a measure force and rhythm. Happily, however, interference was delayed, the expectant plan of treatment persisted in, and complete reaction

ensued. As stated by Dr. M. she is now well, and expects to be confined during the ensuing month of November, 1877.

As a rule, the bromide, in doses varying from 30 grains to one drachm, dissolved in beef-ten, to which brandy and laudanum may or may not be added, should be given every four hours until the nausea and vomiting have ceased, and the stomach will retain some bland food, and stimulants if necessary, and then it should be gradually withdrawn by extending the intervals between the enemata. This treatment has not failed in any case which has come under my observation; but the practitioner must not imagine that with the suspension of the nausea and vomiting the case is concluded. The effects of the deprivation of food and fluids, together with the nervous and circulatory disturbances, may seriously protract convalescence, and excite the gravest apprehensions.

In conclusion, I must add that the method of treatment is not original with me. To Dr. Girabetti is due the credit of having first suggested and successfully applied this mode of administering the potassium bromide in obstinate vomiting of pregnancy. He administered it in increasing doses, giving 92 grains the first day, 8 grammes the second, and 10 the third; after which he lessened the dose in proportion to the effect produced.

OCTOBER 1, 1877.

ARTICLE XIV.

CASE OF PARALYSIS OF ABDUCTORS OF VOCAL CORDS; TRACHEOTOMY; RECOVERY; RELAPSE; DEATH. By ANDREW H. SMITH, M.D., Surgeon to the Throat Department of the Manhattan Eye and Ear Hospital, New York.

F. C., aged 50, native of Ireland, messenger, came to me Sept. 8, 1877, suffering from urgent dyspnoea, which he stated had been coming on for two years, but had grown rapidly worse during the previous fortnight, until the night before he had suffered so much that he thought he should not live until morning.

A laryngoscopic examination showed at once the cause of the difficulty to be complete paralysis of the posterior crico-arytenoid muscles. The ligamentous portions of the vocal cords were in perfect apposition, leaving only a triangular opening about a line and a half in extent each way between the vocal processes of the arytenoid cartilages. This small opening was all the space available for breathing, and even this was lessened whenever a powerful inspiratory effort was made. Expiration was unimpeded. The vocal cords were reddened and somewhat thickened. The voice was husky, but retained its laryngeal character.

The patient gave a clear history of specific lesions contracted fifteen years ago, and followed at intervals since by consecutive symptoms. Four years ago had facial paralysis, which lasted eight months. Had had cough and profuse expectoration for some months, and had been troubled for years with an anal fistula, which discharged very freely.

There was apparently some degree of dulness at the apices of both lungs.

Auscultation gave no very satisfactory results, owing to the impeded respiration; but it was evident that chronic bronchitis existed, with more or less of bronchial spasm.

Feeling that the patient's life was every moment in jeopardy, I suggested tracheotomy, to which he readily assented, and the operation was performed at the Manhattan Eye and Ear Hospital on the following day. The trachea was more than usually irritable, and the coughing caused by the insertion of the tube was very violent and long continued. Indeed this irritability constituted a very awkward feature of the case throughout, and was, perhaps, the indirect cause of the unfavourable result. The slightest interference with the tube would provoke a furious paroxysm of cough, which would continue until the patient was almost exhausted. Changing the canula for one a little smaller was not attended by any good result, and morphia had to be employed to obtain any rest.

Considering that the paralysis probably depended upon a gummy deposit somewhere in the track of the inferior laryngeal nerve, I put the patient upon liberal doses of iodide of potassium, with half a grain of the protiodide of mercury, three times a day. In the course of about two weeks the paralyzed muscles were found to have regained their action to a slight degree, and then direct faradization by means of the laryngeal electrode was resorted to. The improvement was very rapid, and in two weeks more the movements of the glottis seemed to be almost normal. Meantime the cough was excessively wearing, and great quantities of mucus were expectorated through the tube. The patient complained of a great deal of tightness and wheezing in the chest, which was but little relieved by treatment. As his strength was breaking down, and the larynx was now acting very satisfactorily, the cause of the paralysis being apparently under control, I determined to risk the removal of the tube. For a few days the cough was less severe, but it soon became as bad as ever, so that I was doubtful whether the presence of the tube had had as much to do with it as I had supposed. The expectoration of mucus was not lessened, and the auscultatory signs were those of chronic bronchitis with asthma. The patient gained ground, though slowly, for the next three weeks, and then began to lose again, complaining of increasing tightness of the chest. On the evening of the 28th of October I was summoned to see him, and found him in the condition of a person with a moderately severe attack of asthma. It was easy to see that the dyspnoea had its origin in the lungs and not in the larynx, and an examination with the mirror showed that the glottis was acting as well as at any time previously. A dose of morphia hypodermically gave marked relief. The following evening I called again, and found the patient in the same condition. I did not then make a laryngoscopic examination, but repeated the injection, with the same result as on the evening before. Twenty-four hours later I was summoned in great haste. The patient's wife told me that he had had great difficulty of breathing all day. The moment I saw him I perceived that his condition was widely different from what it was at my previous visit. The difficulty was now plainly laryngeal, and the first glance with the mirror showed that the cords were again in close apposition.

The wound had so nearly healed that no air entered by it into the trachea, though a little escaped during expiration. With some difficulty a No. 8 catheter was introduced, but, though the breathing was relieved, the cough which resulted was so violent that the patient would not permit the instrument to remain. I therefore left him, to procure the necessary

instruments and assistance to introduce a canula, but when I returned he was dead. I was told that I had scarcely left the room when he rose from the chair in which he had been sitting and went to the bed and lay down. A moment after, without any noise or struggle, he ceased to breathe. It is probable that overfilling and consequent paralysis of the right heart was the immediate cause of death, rather than direct asphyxia, for when I left the patient he was able to walk about, and though breathing with great difficulty his face was but slightly dusky, and actual suffocation appeared not to be immediately at hand.

Doubtless the recurrence of the laryngeal paralysis was due to the exhaustion caused by the asthmatic attack.

110 EAST THIRTY-EIGHTH ST., NEW YORK, NOV. 17, 1877.

ARTICLE XV.

CASE OF MOLLUSCUM FIBROSUM; TUBERCLES OF AN UNUSUAL SIZE. By F. PEYRE PORCHER, M.D., Professor of Clinical Medicine and of Materia Medica and Therapeutics in Medical College of State of South Carolina, Charleston.

THIS patient entered the City Hospital in November, 1876, and remained there for some months. He asked for his discharge, and no further accounts have been received from him. In the following description are included some notes kindly furnished by Dr. F. P. Lewis, of Colleton County, S. C., then an under-graduate, who had known the subject whilst at his home in the country, and was instrumental in bringing him to the city.

Solomon Youngblood, colored, aged 17, native of Colleton Co., S. C., was first seen March last (1876), at which time he had from seventy to eighty tumours on his person. These varied in size from a large-sized water bucket to that of a pea, resembling tubercles, sacks and soft, flabby, pendulous "cutaneous purses." The largest tumour he says is congenital. This remained stationary, of the size of a pigeon's egg, until he was six years old, and was located between the shoulders; since that time it has grown very much and gravitated downwards, until now it hangs in folds from the left buttock, reaching as far down as the knee. Another, growing just below and to the inner side of the knee, and as large as a coconut, rests on one of the same size just below it—these two being attached by constricted necks. Between these one was taken out about eight years ago, weighing eleven pounds. During the operation there was a good deal of hemorrhage. This tumour when cut into presented a grayish appearance and consisted seemingly of dense fibrous tissue. Another tumour grows from his left groin, and still another just below his left breast; each of these is about as large as an egg. One on his wrist is about the size of a walnut; the remainder are smaller.

Since the time mentioned above these tumours have increased in size and number, the one on his groin, having grown rapidly, has gravitated downwards, and has coalesced with that below the knee. His mother

has a tumour of a similar kind, between the shoulders, and about the size of an egg. His general health is moderately good, circumstances bad, living in much exposure, badly clothed, with scanty food and of bad quality.

Nothing of interest occurred in the history of the case whilst in hospital, no efforts made by me to improve his condition being of any avail. His appetite and general health were good, and he made no complaints, except of the chafing caused by his clothes, which had to be cut unsymmetrically to cover the redundant growth hanging from one side of his body. The tumours visibly increased in size, during his three months' stay in the hospital.

He was carefully weighed in January, the weight of another person of apparently similar height and size was obtained, and the difference, fifty to fifty-six pounds, was taken as the probable weight of the growths. Messrs. G. R. Sparkman and John Forrest were present at the weighing and superintended it. His weight before entering the hospital had been 145 pounds.

This case resembles in some particulars Oesterloney's, only mine is perhaps even more remarkable, especially as regards the size of the tumours and the immense extra weight which the boy was forced to carry.

By a microscopical examination, very incomplete however, which I made, the tissue appeared to be of a dense fibrous structure. I am inclined to consider these growths to consist simply in an unusual hypertrophy of the dermoid tissue, not very dissimilar to elephantiasis, and I think it likely that their development takes place in the corium specially; for we find that Kolliker (in his *Manual of Human Histology*, vol. i. 110, Syden. Soc. Lond.) points out that the corium "is principally composed of connective and elastic tissue, containing in addition smooth muscles, fat-cells, bloodvessels, nerves, and lymphatics, in great abundance." So we have elements enough here and specially fitted to aid in producing inordinate development, as occurs analogously, also, where there is enormous growth of the scrotal tissue when required to accommodate large hernial protrusions.

I notice since writing the above, that Niemeyer states that *M. simplex* (Fibroma molluscum of Virchow) results from "a circumscribed hypertrophy of the connective tissue of the skin." *Practice*, vii. 397.

ARTICLE XVI.

A CASE OF MEMBRANOUS ENTERO-COLITIS. By W. F. MUILENBERG, M.D.,
of Reading, Pennsylvania.

The patient, a married lady aged about fifty-five years, was first visited by me on the 1st of February, 1877. She had lost three brothers by tubercular affections between the twentieth and thirtieth years of their lives, and one son by diabetes; and her father and mother had both been

subject to the gout, of which her father died, although her mother was still living, aged over eighty years. She herself had been subject to dysentery and diarrhoea, and, while residing in Europe, had suffered from an intestinal inflammation for six months, which the doctors there pronounced "schleim-fieber," or a mucous fever.

When called in, I found her suffering from an acute attack of unilateral pleuritis, together with complete derangement of the gastric function. Six months previously I had attended her for a small infra-scapular carbuncle. During the previous four months her bowels had been alternately constipated and relaxed; and during that time she had complained of a general feeling of malaise, together with intestinal disturbance, all forcing her to keep her bed most of the time, but she had neglected consulting a physician. During the treatment for pleuritis, I administered effervescent citrate of magnesia in tablespoonful doses as an agreeable febrifuge; but noticed that it had a marked deleterious influence on the condition of the bowels, and soon discovered, in the stools that were passed, immense quantities of the "membranes" or "skins," pathognomonic of membranous enteritis.

These membranes varied in length from one inch to a yard, and in breadth from a line to three or four inches. None of them were tubular. Sometimes they seemed to be only "mucous shreds;" but at other times complete casts of the intestinal mucous membrane, including representations of the glands, follicles, and folds; examined microscopically and chemically, they presented the usual characteristics of these discharges, showing themselves to be *entirely* mucous. There was, in addition, steady pain radiating from the umbilicus, a tender spot on pressure below the left scapula, a general feeling of soreness over the entire abdomen—localized, however, more particularly in the regions of the ileo-cæcal valve, sigmoid flexure, and transverse and descending colon. No spinal tenderness was present. The slightest movements of the body increased these pains, which had been noticed before the pleuritis, but were somewhat masked by it. The pain at the ileo-cæcal valve and sigmoid flexure was of that burning character peculiar to gastric ulcer, and was very much aggravated by any manipulations. The bowels, as in the previous three months before I saw the case, were alternately constipated and loose; but unfortunately before this time the evacuations had not been ocularly inspected. The discharge of these "skins" took place almost daily, although occasionally every second day, and varied in quantity from a pint to a chamber-vessel-ful. Only twice during the progress of the disease was any blood noticed in the stools, and then it was probably due to internal hemorrhoids. The stools at no time were scybalous, but were generally frothy.

After the subsidence of the pleuritis, the condition of the patient was as follows: The pulse, normally 50, registered 70 beats to the minute, was very soft, compressible, slightly irregular, and thin; the skin was cold, dry, and frequently resembled the so-called cutis anserina; the temperature of the body was 97° Fahr., and showed a slight increase in the morning; the memory was very much blunted, and sleep much disturbed by dreams. There was alternate constipation and looseness of the bowels. The feet and hands were continually cold, and there was slight stagnation of the circulation in the extremities. The tongue, at first flabby, soon cleaned, but resembled the "strawberry tongue" of scarlatina, and was full of cracks, which were *always* more numerous and deeper before the dis-

charge of the "skins." The body was much emaciated, but more particularly in the abdominal region, where there was extreme hollowness, so that the spinal column could be easily reached by manipulation. Tympanites and gurgling, however, were almost constant symptoms. The patient was excessively nervous and depressed; while slight neuralgic pains occasionally showed themselves along the spinal column, where, however, no tenderness could be detected. Every morning a hectic flush could be noticed on the cheeks; and a nervous, dry cough was present for quite a time. "Cold creeps" were frequently noticed along the spinal column. The menopause had taken place, and there was *no* uterine trouble. No heart affection could be detected, and there was only a slight increase of hepatic dulness. There was no kidney trouble, as the urine, although slightly diminished in quantity, but pale, was nearly normal. A chill, fall in temperature, an increase in the cracks on the tongue, and abdominal symptoms *invariably* preceded the discharge of the "membranes."

Iron and opium increased the abdominal pains and quantity of the discharge. Quinia in the smallest quantity produced excessive headache and ringing of the ears. Alcohol, except in the shape of a very light native Clinton wine, and milk, totally disagreed.

The patient was directed to use every morning a rectal injection of lukewarm water, to be followed in half an hour by the injection of a fluid-ounce of the following mixture in six ounces of water: *R.* Tinctura benzoini comp., fʒss; tinctura opii, fʒiss; extracti hamatoxyli, ʒij; olei cubebae, fʒiij; mistura acaciae, q. s; aqua ad fʒiv. *Ft. mistura. S.* Two tablespoonfuls as directed. The back and legs were rubbed morning and evening with a stimulating liniment, and the surface of the abdomen was very lightly brushed over with the same. Every morning and evening one of the following powders was taken: *R.* Pulveris ergotae, gr. xxv; plumbi acetatis, gr. iss; bismuthi subnitratiss, gr. xlv. *Ft. pulvis in sex chartulas dividenda. S.* One as directed. For a short time the syrup of the lactophosphates of iron, quinia, and strychnia was used, but had soon to be discontinued, owing to the idiosyncrasy of the patient. A tight flannel binder over the abdomen and perfect recumbency in bed were insisted upon.

The diet, restricted to *beef-tea* and dry toast, was steadily persevered in; and *all the drinking water* used was first boiled. No other food than this just mentioned was used for five months, and even at present the beef-tea forms the staple article of the diet. The ergot and sugar of lead were used until prudence dictated their discontinuance, when the following pills were substituted: *R.* Argenti nitratiss, gr. ij; cupri sulphatiss, gr. iv; terebinthina canadensis, ʒss. Div. in pil. xxiv. *S.* One after each meal. These pills were artificially hardened before being used, so as to pass, if possible, the stomach unchanged.

Under this treatment there was a very gradual improvement, until, on the 1st of May, the patient was allowed to leave her room. The frequency and quantity of the discharges had materially lessened. They took place only about once a week, instead of once a day, and, instead of being "skins," were nothing but "shreds" in very diminished quantity. The patient slowly gained strength, and the abdominal soreness and pain materially abated. Under the use of the injections, the pain and soreness in the descending colon and sigmoid flexure of the rectum entirely disappeared, until at last the only tender spot on the abdomen was at the ileocaecal valve. The memory improved, and sleep became more steady. The

chills and "cold creeps" almost entirely disappeared, and the circulation in the extremities became more active. Fowler's solution of arsenic, in three-drop doses three times a day, was then commenced, and agreed and acted very favourably. The muriated tincture of iron was tried for a short time, but soon disagreed. Contrary to the generally expressed opinion, exercise in this case proved very injurious, and was always followed by a discharge of the "skins."

On the 1st of June, the patient left the city for a short visit, and returned much improved.

During June, and since that time, a peculiar squamous eruption has shown itself on the skin; before that time, an extravasation, very much like purpura hemorrhagica, was noticed on the arms and legs. The spots after a short time became yellow in colour, and the places where they had appeared looked as if they had been bruised. Since that time her condition has improved, until at present she passes no "skins" at all, and has not done so for the last twelve weeks, and before that not for four weeks. Her natural colour has returned, her appetite is good, and she has gained in flesh more than she had lost. At present she takes moderate exercise, walks about, visits her immediate neighbours, and says she feels stronger than ever before.

The assignable causes of this disease may be the following, but to which we must ascribe it, it is difficult to say: 1. An inflammation of the mucous membrane of the intestine, produced by piles. 2. Repeated attacks of diarrhoea or dysentery. 3. Possibly a, so to say, skin affection of the intestines. 4. Drinking of a hard limestone water. 5. Residence in a damp house—surrounded very densely by trees. 6. A tuberculous affection of the intestines.

The diagnosis of this affection is easy as soon as the membranes are seen in the stools; but before that, or if they have not been examined, it is rendered probable by the following symptoms: Alternate constipation and looseness of the bowels. Pain and soreness in the intestines; unattended by much fever. Tender spots in other parts of the body. Suspicious lung symptoms. Excessive nervousness, with marked loss of memory. Chilly sensations, more particularly affecting the spinal column. The peculiar cracked appearance of the tongue. The harsh, scaly skin, and low animal heat. The slight relief of pain and intestinal soreness after the discharge of the stools. The feeble circulation in the extremities, and the premising of the case by some cutaneous disorder, more particularly by boils and carbuncles.

The *boiling of the water*, the *exclusive diet*, and *perfect rest*, together with the use of stimulating liniments, seem to have effected more in the amelioration of this case than anything else, although the action of the ergot and of Fowler's solution has apparently been beneficial.

An admirable account of this disease and its treatment, by Dr. Da Costa, will be found in the number of this Journal for October, 1871, p. 321.

ARTICLE XVII.

TWO CASES OF NERVE STRETCHING. By THOMAS G. MORTON, M.D., Surgeon to the Pennsylvania Hospital. Reported by WILLIAM C. COX, M.D., Assistant Surgeon to Philadelphia Orthopaedic Hospital, and Surgeon to Out-Department of the Pennsylvania Hospital.

CASE I. *Neuralgia of Arm and Shoulder from a Wound of the Ulnar Nerve; Nerve Stretched; Cured.*—On the evening of February 11, 1877, Miss B. dropped a pair of scissors and in catching after them the handles struck on the arm of her chair and the upturned points entered the outer side of the right wrist with so much force, that she was obliged to pull them out with the other hand. The wound bled very little, but the pain was intense from the fingers to the shoulder. The patient had been sick for three months, and was just convalescing from typhoid fever at the time the accident occurred; a laudanum dressing was immediately applied. The wound healed within two weeks, but the pain in the hand and wrist continued to increase, and gradually it involved the elbow, shoulder, and side. The patient was never free from pain; at times a dull ache, and again very severe, especially after the least use of the hand. Dr. Morton was first consulted March 22d. It was found that the pain was increased by pressure at the place of injury; small blisters were then applied, and the following week belladonna and glycerine; there being no improvement, a week later, strong aconite liniment was substituted; this application was continued for three weeks. Sewing and writing were found to be especially painful; there was also sensation of numbness and cold in the hand. Dr. Morton thought it advisable to try the effect of stretching the ulnar nerve, for the pain was evidently increasing, and all treatment had proved abortive; on May 3d Dr. Mitchell saw the case in consultation, and fully agreed as to the proposed operation. On May 7th the patient was etherized, and an incision three inches long was made directly over and on a line with the nerve at the wrist; the nerve was carefully examined at the place of puncture, but no sign of any enlargement or hardness or change in any way could be detected. The nerve was then isolated, and the forefinger carried under it, and the cord was well stretched; after the nerve was replaced, it apparently was considerably lengthened, from its wavy appearance as it lay in position. The wound was brought together with silver sutures, and the hand placed on a splint. The pain in the arm after the effects of the ether had passed off was intense, notwithstanding large doses of morphia used hypodermically. A few days later an abscess formed in the upper part of the wound, which discharged through the opening near the wrist. For several weeks a feeling of numbness and tingling continued in the little and ring fingers and upon the outside of the hand, but gradually these symptoms disappeared; at no time was there a total loss of sensation in the ulnar distribution. The wound healed nicely, but left a hard cicatrix, tough and rosy. In a month the pain had ceased; sewing and writing still produced an ache, which was participated in by the whole arm and shoulder. This gradually diminished; but, as the patient was of a rheumatic temperament, it may have been aggravated by that condition.

Dec. 1. The patient's arm is quite well, without the least symptom of impaired nerve action; sensibility and muscular power perfect; the only

noticeable change being a wearied sensation in the arm and shoulder after much use of the hand or fingers.

CASE II. Neuralgia of the left Leg and Foot; Stretching of the Sciatic Nerve.—H. K., carpenter, aged 52. In August, 1866, he fell twenty-five feet from a scaffold upon a stone pavement, striking his buttocks; the left leg was found flexed, with the foot under the right knee, and turned on its outside, with the iron part of a hatchet under the head of the fibula. He was taken up insensible, and remained in that condition more or less for ten days, and had some difficulty of speech for four weeks. Was examined by Drs. Arnold and Longshore of Hazelton, who were unable to find any fracture or luxation; the urine was bloody for five days following injury, and catheterizing was found necessary twice daily for ten days. At the end of six weeks he became perfectly rational, but showed paralysis of both legs. This continued for three months, when the right leg showed an improvement, and at the end of five months the patient was able to leave his bed and move about on crutches; still he had no power or sensation in the left leg. At the end of another month sensation had gradually returned. He improved slowly until April, 1867, when he was seen by Dr. Casselberry, of Hazelton, who found him suffering with acute articular rheumatism, all the large joints being implicated. Had never had syphilis. Soon after recovery he complained of excessive pain in sole of left foot, without heat, no swelling, no constitutional disturbance, no increase of pain on pressure; there was loss of sensation of foot, and half way to the knee, entire on the outside of leg, and partial on inside. The pain in the sole of the foot increased until it was excruciating. Temporary relief was only obtained by the use of large doses of morphia. Pain continuing, Dr. Casselberry excised a portion of the plantar nerves; relief followed for seven years. In 1874, suffered from pain in the great toe, which extended over the anterior part of the foot. The pain gradually increased, and involved the leg as well as the foot. From the pain and morphia, the patient's health was thoroughly broken down. June 12, 1877, the patient arrived in the city with his physician, Dr. Casselberry, and consulted Dr. Morton, who recommended, at first, stretching of the sciatic nerve rather than any nerve excision, and in this was supported by Drs. Mitchell and Hunt, who saw the case in consultation. The patient was suffering so intensely from pain that the operation was performed at the patient's urgent request at the Orthopædic Hospital the same day; after etherization the sciatic was readily reached in the middle of the thigh, and was thoroughly stretched; the fore finger was passed under the nerve, and then by drawing upon the nerve the limb was twice lifted free of the bed. The nerve trunk after the stretching had also the appearance of marked elongation, more than filling its normal place in the wound. The incision healed at once, no suppuration. The patient insisted on going to his home in Wilkesbarre on the second day after the operation. For five days he had spasms, or twitchings, of the muscles of the leg and thigh, with exquisite sensitiveness along the course of the sciatic and popliteal nerve, but this gradually subsided, and on the 12th day this symptom disappeared. Pain in the old location, however, still continued, and injections of morphia were used daily. Some weeks after this, the suffering being very great, Drs. Casselberry and Longshore excised two inches of the external popliteal, which is said to have given entire relief.

In the case of the ulnar nerve stretching, the increasing pain, which had not only involved the hand and arm, but had extended to the patient's

neck and side, has been entirely relieved by this operation, which certainly inflicts far less injury than any nerve excision. In the case of the sciatic nerve stretching, the operation did not give any relief; it was unfortunate that the patient left the hospital so soon after the operation, for this in itself may in a measure have militated against any good the operation might reasonably have been expected to afford.

ARTICLE XVIII.

USE OF THE TESTICLE IN THE RADICAL CURE OF INGUINAL HERNIA. By CHARLES T. HUNTER, M.D., Demonstrator of Surgery in the University of Pennsylvania.

AMONG the very many expedients to which surgeons have resorted in their efforts to establish a radical cure in cases of inguinal hernia, the human testicle, so far as I have been able to learn, has never been utilized. The following unique case of a patient who was sent to me for advice, by a brother practitioner, is so remarkable, and the result so satisfactory to the patient himself, that I have considered the case well worthy of record:—

Mr. P., *et.* 22, medical student, a strong and unusually well-developed man, free from all traces of either hereditary or acquired disease. Six years ago, as a consequence of some violent exertion, Mr. P. sustained a rupture in his right groin. After the subsidence of the immediate effects of the injury, Mr. P., with the advice of his physician, tried various trusses and other means to keep the hernia within the abdomen. His efforts to obtain relief by the use of trusses were of no avail, for in spite of every truss applied, some portion of the hernial contents would slip past the pad of the instrument, and thus render his condition worse than it was without a truss. After three years of ineffectual efforts to find an instrument that would afford the desired relief, Mr. P. almost unconsciously got in the habit of keeping the hernia reduced by gently pressing with his hand, concealed in his pocket, the testicle of the affected side up against the margin of the external ring. In order to facilitate this manipulation Mr. P. had a long pocket put in his pantaloons on the side on which the rupture was situated. With his hand in this pocket, supporting the testicle against the edge of the inguinal ring, Mr. P., while sitting, standing, or walking, kept the hernia up and the ring closed. After pursuing this peculiar treatment for about a year, greatly to Mr. P.'s surprise, he found that the testicle had become firmly fixed in the external abdominal ring, and afforded a complete barrier against a descent of the hernia.

Mr. P., eight weeks before calling on me for professional advice, contracted gonorrhœa; three weeks subsequent to the attack of gonorrhœa, epididymitis of the retracted testicle occurred, from which Mr. P. experienced intense suffering. The pain attending this attack of inflammation of the epididymis was doubtless greatly intensified by the resistance of the surrounding tissue to the swelling of the inflamed gland.

On a careful examination of Mr. P.'s case, when I first saw him, I

found the right testicle quite firmly fixed within the columns of the external abdominal ring, effectually closing the outlet of the inguinal canal through which the hernial contents formerly escaped into the scrotum. The barrier afforded by the presence of the testicle at the ring, without the aid of a truss or other retentive means, has been adequate thus far to keep the rupture in place.

When I first examined Mr. P. neither coughing nor violent straining of any character was sufficient to displace the gland from its present abnormal position behind the columns; this fact I have verified by two subsequent careful examinations. The right half of the scrotum, which formerly contained the testicle, has contracted to nearly one-half its normal size in consequence of disuse.

The most interesting feature of this extraordinary case is the remote possibility of displacement of the right testicle from its present location, and a subsequent reappearance of the rupture in consequence of the *vis à tergo* to which the testicle will be constantly exposed.

During the entire period of the patient's unconscious treatment of himself, there were no symptoms of inflammation in the right groin about the testicle; hence it is probable that the testicle is not held in its present useful position by inflammatory adhesions. If, then, the testicle of this patient have no direct vital connection with the margin of the external ring or the sides of the inguinal canal, its retention in its present position, apparently at least, is dependent on diminution of the size of the external abdominal ring by approximation of its sides or columns towards each other, and shortening of the right spermatic cord.

In order that Mr. P. may retain what has already been accomplished in such a remarkable way in his case, I have advised him to carefully avoid all violent muscular exertion for several months, and to keep a compress secured by a spica bandage upon the right groin.

ARTICLE XIX.

A CASE OF PURULENT PELVIC EFFUSION, OPENING SPONTANEOUSLY INTO THE VAGINA. By W. H. HAYNES, M.D., Late Resident-Physician to the Presbyterian Hospital; Attending Physician to the Eastern Dispensary, New York.

In the number of this Journal for April, 1877, Dr. Brickell writes: "That he has never seen spontaneous discharge through the vagina of a pelvic effusion; nor, from the anatomical position and relations of this canal, would he anticipate such a thing." To add to the evidence adduced by Dr. Atlee, in the July number of this Journal, where he gives cases in which the opposite of Dr. Brickell's conclusion occurred, I refer to a similar case, reported in the *American Supplement to the Obstetrical*

Journal of Great Britain and Ireland, for April, 1877, page 4, and quote the following from the records of my own very limited experience:—

R. C., a female, aged twenty-eight, born in Germany, married, house-keeper, admitted to the Presbyterian Hospital Feb. 17, 1877. Family history good. A resident of this country twenty-one years. Married eight years; but has never been pregnant. Up to present illness, has always menstruated regularly. Six years ago, had what was called inflammation of the womb; since which time she has been in poor health and under continual treatment for uterine trouble.

Three months ago, while menstruating, symptoms of pelvic cellulitis developed; followed by a severe attack of that disease. About the fourth week of its duration, after a hard passage from her bowels, she felt a sudden gush, which she found to be a discharge of matter from her vagina. This has kept up ever since, attended with pelvic pain and loss of flesh.

At the time of her admission she was very anæmic and emaciated. Had a copious greenish, offensive discharge from vagina. Pain across small of back and in hypogastrium, preventing perfect rest. Coated tongue; poor appetite; fever; and a small, rapid pulse.

On examination per vaginam, there exists, about a finger's length within the ostium, on the right side of the posterior wall, an orifice readily admitting an English catheter and leading to a large abscess in the recto-vaginal septum. The uterus is enlarged, displaced, and bound down away over to the left side. All the tissues feel hard and thickened. Rectum and bladder sound.

The sinus was slit up a short distance, giving free vent to a quantity of pus, and a plug put in. Warm disinfecting vaginal injections, with quinia, iron, and cod-liver oil internally, was the plan of treatment pursued, with material benefit to the patient. Later on injections of carbolic acid and tincture of iodine were made into the cavity of the abscess. Notwithstanding all means of treatment she has recurring attacks of pelvic inflammation, followed by a profuse discharge of pus, confirming the statement of Thomas (*Dis. of Women*, 4th ed. p. 457) that "one or more abscesses may discharge themselves by long sinuses which fail to allow of their complete evacuation, and may continue to pour out pus for months, or even years."

REVIEWS.

ART. XX.—*Transactions of the International Medical Congress of Philadelphia.* 1876. Edited for the Congress by JOHN ASHURST, Jr., A.M., M.D. Royal 8vo. pp. xlix., 1153. Philadelphia, 1877.

THIS large and closely printed volume is offered by the editor as "a not unsatisfactory memorial of the meetings of that important body of which it records the acts—the first International Medical Congress of America," and if the words "very satisfactory" be substituted for the modest "not unsatisfactory," the characterization is accurate. No small part of this is due to the knowledge, care, and good taste of the editor, than whom no one could have been found more competent or pains-taking, and while none but those who have tried somewhat similar work can properly appreciate the amount of labour which has been bestowed on this volume, it is clear enough that all members of the Congress, and especially those who contributed either papers or comments, are under obligations to him for the result.

All readers of this Journal are probably familiar with the circumstances which led to the assembly in Philadelphia last year of the largest body of medical men which has ever met on this continent; and those who wish for details as to the preliminary work of organization will find them in a brief sketch of the work of the Centennial Medical Commission, by Dr. J. H. Hutchinson, which follows the editor's preface.

The title of "International Medical Congress" does not by any means express the true character of this assemblage, although it would not be easy to find a better one which would be sufficiently brief.

Strictly speaking, there are but two papers in the volume which relate to medical matters of "International interest," viz.: those on Quarantine and on a Universal Pharmacopœia; and the first three hundred pages are occupied with the Centennial Addresses, which are decidedly the reverse of international in character.

These addresses, eleven in number, taken together, give a very good view of the history of medicine in this country, and will be valuable to future writers for the biography, and more especially for the bibliography which they contain; but one cannot help wishing that either some of the lecturers had adhered more closely to their texts, or else that the editor should have been allowed, and been willing, to consolidate their productions somewhat.

One of them, that on Mental Hygiene, by Dr. Gray, is neither historical nor bibliographical, and is thus in strong contrast to the rest; it is devoted to advocating the claims of religion, and to objecting to the scientific theory of culture as set forth by Huxley, Tyndall, and other scientists, but nothing definite is offered in its place, except some suggestions from Bulwer's novel "The Caxtons," which are certainly good in themselves so far as they go.

The majority of the addresses are, of course, highly laudatory in char-

acter, as suited the occasion, but there are two marked exceptions. Dr. Bowditch, in the address on Hygiene, presents a summary of the answers obtained by him, from all the States and Territories except one, to a series of twenty questions upon the actually existing condition of Preventive Medicine in the several States, and the results which he got were, as he says, very unpalatable.

It appears that in a large majority of the States no attention is given to the matter, no willingness is manifested to spend money for the support of Boards of Health, for scientific investigations of the causes of disease, for the repression of noxious and offensive trades, or for the prevention of the adulteration of food; and, in short, that the work of organization for public hygiene has yet, for the most part, to be done. Its necessity and vitality are, however, beginning to be perceived by the people, and there is good hope for the future.

The second exception is in the address on Medical Jurisprudence. Dr. Chaillé, having collected his data, probably sat down to prepare the history of progress and improvements in medical jurisprudence due to America, with somewhat of the feeling of the historian of Iceland when he compiled his celebrated chapter on the snakes of that country. His record of what has been left undone, and of what ought to be done, is decidedly larger and more important than that of what has been done, and his suggestions for improvement are interesting and valuable. Since he wrote, his idea of substituting for coroners a corps of medico-legal officials has been carried out in Massachusetts, and although his demand that these officials should be "*specially trained as medical experts, and attested as competent by competent judges*," has not, and in fact could not at present be complied with, still a step in advance has been taken, and a great one, which if persisted in will create a demand for a class of men which now can hardly be said to exist.

Both of the addresses just referred to come under the general head of State Medicine, a term not familiar in this country, because of the total absence of the thing itself, and because of the want of men properly trained to take charge of such subjects. Medical Jurisprudence and Public Hygiene belong together, like the blades of a pair of scissors; the way to make them powerful and useful is to join them, and this should be borne in mind in any attempts to organize a body of Medical officials, who are to be in the service of the State.

Upon the other addresses, by Drs. Flint, Wormley, Eve, Toner, Parvin, Yandell, Davis, and Woodward, we shall not attempt to comment; the names of these authors are sufficient proof of their interest in an historical and literary point of view, and we will pass at once to the reports and papers presented to the Sections.

The first paper among those presented to the Section of Medicine is that of Dr. WOODWARD, U.S.A., entitled, *Typho-malarial Fever: is it a Special Type of Fever?* After calling attention to the mortality in armies from disease, the remarks of Virchow upon the small losses of the German army during the late war with France, as compared with the great mortality in the American armies during our recent war, are discussed. Virchow thinks that the good results were due to the fact that "we possessed the inestimable experience of the Americans, and, finally, we had German science." But it is shown that if the losses for the seven months of the German war be compared with the losses of the first seven months of our own war, with which only they can be fairly compared, the

discrepancy is not nearly so great as Virchow supposed. There is a difference, however. The German figures give a mortality $1.9 \pm$ per 1000 monthly, while our own statistics show a mortality of 2.7 per 1000 monthly.

While admitting that this is in part due to better discipline and a wiser application of preventive medicine on the part of the Germans, Dr. Woodward thinks that much should also be attributed to the malarial influences to which our troops were exposed, and this leads to a discussion of the effects of malaria as complicating the ordinary camp diseases, and especially typhus and typhoid fevers. By a very interesting, complete, and accurate historical account of the diseases of armies in malarious regions, and especially in Hungary and the Netherlands, it is shown that hybrid forms of fever due to malaria are the rule and not the exception, and this is followed by a sketch of the so-called typho-malarial fever of our own war of 1861-65. This term was proposed by Dr. Woodward, not to represent a specific type of fever, but "to designate all the many-faced brood of hybrid forms resulting from the combined influences of the causes of malarial fevers and of enteric fever."

When the name "typho-malarial fever" was placed upon the Army Medical Monthly Reports, no special official circular was issued defining it, and there is no doubt that cases were reported under this head which did not belong to it as not having enteric lesions. But the work of Dr. Woodward on Camp Diseases was in the hands of almost all medical officers, and in this the meaning of the term is made plain enough, so that the error in taking large numbers of cases such as the medical statistics of the war present is probably slight, although the safest view is that of Dr. Woodward, that the statistics do not show the proportion of typhoid fever and malarial fever cases which actually occurred.

His conclusion is that typho-malarial fever is not a special type of fever; that it cannot be considered as a new disease; that whenever an army recruited in a comparatively non-malarial region campaigns on a malarial soil, such hybrid forms will appear, and that sporadically such cases will appear in civil practice in miasmatic regions. After some debate the following conclusion was adopted by the Section.

"Typho-malarial fever is not a special or distinct type of disease, but the term may be conveniently applied to the compound forms of fever which result from the combined influence of the causes of the malarial fevers and of typhoid fever."

In his discussion of the question, *Are Diphtheritic and Pseudo-membranous Croup Identical or Distinct Affections?* Dr. J. LEWIS SMITH takes the ground that they are essentially different.

Admitting that it is impossible to make a clear and certain diagnosis of croup where diphtheria is endemic, he bases his argument mainly upon cases which occurred in New York prior to 1857, at which time diphtheria became established in the city, upon observations of physicians in localities where diphtheria does not prevail, and on opinions collected from medical literature, all of which, he considers, prove that one is non-contagious and the other highly contagious; that they occur at different ages, have different sequelæ, and are not alike as to results of treatment. He gives the results of microscopic examination of the diphtheritic membrane, and of diphtheritic lesions of the kidney and air-passages, made by Drs. Satterthwaite and Heitzmann, of New York, in cases carefully observed by himself; and concludes, that "neither the microscope nor chemical tests show any qualitative differences which hold good as a means of distinguishing the false membrane of croup from that of diphtheria," but that there

is sufficient difference in the relation of the false membrane to the underlying tissues, in the condition of the blood, and in the lesions found in the kidneys, to warrant the opinion that they are essentially distinct.

In the debate which followed, the conclusions of Dr. Smith were opposed by Dr. Pepper, and the final result, although not formulated, was that as yet we have not sufficient data to decide the question, although the balance of probability seems to be that there may be a specific element in diphtheria which was wanting in the sporadic croup of thirty years ago.

In answer to the question *Do the Conditions of Modern Life Favour specially the Development of Nervous Diseases?* Dr. BARTHOLOW replies in the negative. Referring to ancient writers, he shows that several varieties of insanity, as well as apoplexy and epilepsy, were known to them. Erb's inference that neuralgia must have been rare, because Aretaeus is the first who describes it clearly, he replies to by a reference to the remarks of Socrates on the relation of pleasure and pain, but an examination of the remarks rather strengthens Erb's point than otherwise. He concludes that the apparent increase of insanity shown by recent statistics is due to more accurate registration, that as the longevity of man has increased it is improbable that his nervous system has become more vulnerable, and that the reason why we hear more about nervous diseases in modern times is that they are more accurately studied and differentiated.

In the debate which followed, the weight of opinion seemed to be in favour of a belief in the increase of nervous diseases in modern times, due to stimulants, methods of education, syphilis, etc.

The contribution to the *Etiology of Epilepsy*, by Dr. NEFTEL, is a case of injury of the head which was followed by epileptiform attacks, persistent headache, and the development of a painful zone on the right side of the head and face analogous to the so-called epileptogenic zone produced in Guinea-pigs, experimentally, by Brown-Séquard. The symptoms described are in the main subjective: as Dr. Neftel remarks, "we entirely miss the result of an objective examination as regards sensibility and motility, the ophthalmoscopic appearances, the condition of the pupils, the presence of sugar, albumen, or blood in the urine, etc. To this we would add the effects of anaesthetics. The results of treatment by the galvanic current were, as Dr. Neftel states, quite surprising, in fact they remind us of the celebrated case of Dr. Beddoes and Sir Humphry Davy, in which a case of paralysis was cured by putting a thermometer under the tongue, and we should like to have seen the effects of the metallotherapy of Burq applied in this case.

The first conclusion drawn by Dr. Neftel is—

I. "It is made evident by the case described, that in a perfectly healthy person, free from any hereditary disposition, epilepsy can be brought on by traumatic influences upon the head, causing cerebral commotion without structural lesion of the brain."

This conclusion seems hardly warranted by the case presented, since it is not clear that there was no structural lesion of the brain, and if this be omitted the conclusion is a very old one, viz., that epilepsy may result from injury of the head.

The second conclusion is more cautiously stated, and is undoubtedly correct, *i. e.*—

"Further investigations will be needed to prove that such traumatic influences during childhood may constitute a most frequent etiological factor in the production of epilepsy."

They will also be needed to prove that epilepsy is usually due to disease of the pineal gland, or to obstruction of the perivascular cerebral lymph spaces.

DR. CHARLES DENISON begins his article on *The Influence of High Altitudes in the Progress of Phthisis* by saying: "It is assumed that this occasion calls for something suggestive, leading an inquiring mind to look at an important subject in a new light, and seeing the errors of former beliefs through a change in the channels of thought." This is a little discouraging; and when we get a little further, and find phthisis defined as "a slow death commencing in the lungs," the case becomes very doubtful. Finally, when we come to see the results based on an analysis of 66 cases of phthisis, and the absolute unconsciousness of the author that there is such a thing as calculating the probable limits of error in statistics, and that his figures can by no possibility give even a distant approximation to reliable results, we must give it as our opinion that the ten conclusions to the paper can only be considered such in the sense that they are at the end of it, and that no evidence is presented that altitude *per se* has any special effect in cases of phthisis, which, be it clearly understood, is not equivalent to saying that it has no effect.

The short paper by Prof. LEBERT on the *Treatment of Simple Ulcer of the Stomach* contains nothing specially new, but is a practical, common sense *resumé* of the indications for diet in this affection.

Passing over for a moment the paper on Pernicious Anæmia, we come to Dr. E. M. HUNT's article on *Alcohol in its Therapeutic Relations as a Food and as a Medicine*, which is given only in abstract. It is a review of the literature of the subject, with the following conclusions:—

"I. Alcohol is not shown to have a definite food value by any of the methods of chemical analysis or physiological investigation.

"II. Its use as a medicine is chiefly that of a cardiac stimulant, and often admits of substitution.

"III. As a medicine it is not well fitted for self-prescription by the laity, and the medical profession is not accountable for such administration.

"IV. The purity of alcoholic liquors is, in general, not as well assured as that of articles used for medicine should be. The various mixtures when used as medicines should have a definite and known composition, and should not be interchanged promiscuously."

These conclusions were furnished to the Woman's National Christian Temperance Union and two other Temperance Societies, as the answer of the Section to their request for scientific data, and we hope they were found satisfactory. We do not think that the first two are correct, preferring the views of Drs. Brunton, Sanderson, and Gull, presented to the select committee of the House of Lords, viz., that alcohol is a true food, an inconvenient and unnecessary food in health, but very convenient in some diseases.¹

The first paper in the Section of Biology is on the *Microscopy of the Blood*, by Dr. CHRISTOPHER JOHNSTON. This gives a very excellent and impartial summary of our knowledge of the morphology of the blood, and it merits careful reading by those who propose to investigate questions of pathology connected with this fluid. The paper is not one of

¹ Lancet, Oct. 13, 1877, p. 542.

which any brief summary can be given, and we select but one point for comment, choosing it because it bears upon another article in the volume which we have passed over for a moment, viz., that on *Pernicious Progressive Anæmia*, by Dr. R. P. Howard, of Canada. The point which we wish to emphasize is that the day for estimates and opinions about the size of blood corpuscles, or their number, has past. The summary given by Dr. Johnston in regard to the micrometry of blood corpuscles shows what care and accuracy is required to obtain satisfactory results in measuring blood corpuscles by means of eye-piece micrometers, and even when this has been done with all possible care, another observer cannot verify it. The method used by Dr. Woodward of photographing blood corpuscles and micrometer together seems destined to supersede all others, since by it the diameters may be measured with the greatest possible accuracy, and one can repeat the measurements at his leisure. In like manner the introduction of the hamatimetre for the purpose of counting the number of corpuscles in a given quantity of blood, while in scientific precision immeasurably in advance of the old methods, still needs to be connected with photography, and it does not appear difficult to obtain data of both measure and number in the same negative.

Now, keeping these facts in view, turn to the paper on *Pernicious Anæmia*, by Dr. R. P. Howard, of Montreal, just alluded to, and imagine what results might have been attained had the hamatimetre of Hayem and the micro-photometric process of Woodward been applied to the study of these cases. Even as it is, the paper is an interesting summary of what is known with regard to a rare and singular disease, of which at least three new cases are given as observed by Dr. Howard.¹ The author recognized the importance of microscopic examinations, and such were made, but there is nothing definite in the record. It is said in one case, for instance, that "the red corpuscles looked natural, a few only were crenated; a somewhat unusual variation in size was noticed among them. Many measured scarcely the $\frac{1}{60000}$ of an inch in diameter, as seen with the No. 9 (immersion)." As a record of dimensions this is useless for purposes of comparison, and we have no counting of corpuscles at all; in other words, no definite data as to the degree of anæmia. What is given under this head corresponds to the old-fashioned way of indicating degrees of fever; what is wanted is the precision which would correspond to clinical thermometry.

When we remember the rarity and obscurity of these cases, the fact that the great majority of physicians must be content to see them through the eyes of others, that the observations cannot be repeated and verified as in a chemical experiment, for the opportunity once gone is gone forever—we cannot but insist strongly upon the importance of processes like those of Dr. Woodward, in which personal equations are eliminated, and a record is obtained which is unimpeachable.

Photo-micrography is not merely a process for procuring pretty pictures, or a time-saving substitute for the camera lucida; there is nothing mysterious about its manipulations, nor does it require costly and complicated apparatus, and the day is not far off when every well-educated physician, especially when dealing with questions of pathology or medico-legal investigations, will use it as regularly as his microscope.

¹ Consult in this connection Häberlein, *Casuistischer Beitrag zur progressiven, pernicios-en Anæmia*. Med. Corresp.-Blatt, des Würtembl. ärztl. Ver. Sept. 20, 1877, p. 193.

It is not intended to depreciate in any way the value and interest of Dr. Howard's paper—the defect pointed out is common to all papers on this subject—and it is a defect which will require years to remedy, because of the rarity of such cases. Let us hope that the next case of pernicious anemia will mark a proper beginning of the history of this disease.

The paper by Dr. AUSTIN FLINT, JR., on the *Excretory Function of the Liver*, gives his latest conclusions on a subject which is peculiarly his own; but even his summary¹ is too long to give here, and it cannot be condensed. It was adopted as expressing the opinion of the Section.

Dr. HARRISON ALLEN's contribution on the *Mechanism of Joints* is an abstract of a more elaborate paper, which, if properly illustrated, will be of interest to surgeons as well as anatomists. We do not like the terms static and dynamic as applied to joints, nearly in the sense of fixed and moving, and think it would be better to coin new words to express the peculiar relations to which Dr. Allen refers.

The Surgical Section of the volume begins with a report on *Antiseptic Surgery*, by Dr. J. T. HODGEN, of St. Louis, in which many authorities are quoted, and the various methods which have been used are pointed out. The general tone of the paper is unfavourable to the special form of application known as "Lister's method," as the author does not believe it possible to protect wounds from the contact of catalytic germs; but it is a little curious that this method is not directly alluded to or described, nor is any reference made to the results claimed to have been obtained by it. This deficiency is in part made up by the full report of the remarks of Prof. Lister, in the discussion upon the paper, in which the technik of the method is fully described. Dr. Hodgen calls attention to the fact that putrefaction may occur in the body in sites so remote from mucous or cutaneous surfaces, that we cannot suppose that germs have been introduced either by air or water, and, in the debate, suggests that they may be introduced through the blood. This suggestion seemed to Dr. Canniff to prove that all antiseptics were useless, which is very bad logic. Such cases, as Prof. Lister remarks, are very rare, and not all ill-smelling pus is putrefactive; they should be looked on as special phenomena which require more careful investigation than they have yet secured. Undoubtedly bacteroid forms may exist in the blood; we have so found them in animals apparently perfectly healthy, and it is barely possible, though very improbable, that Dr. Hodgen's explanation may be correct.

One reason why the advocates of antiseptic surgery, including Professor Lister himself, have not made more rapid headway in overcoming opposition to it, is that they base their arguments mainly on *à priori* grounds, viz., on the methods of origin and diffusion of germs. Neither in Dr. Hodgen's paper nor in the discussion which followed it, including Mr. Lister's remarks, is any use made of the actual results obtained, and as a record of facts the statistics and results given by German surgeons, and especially by Prof. Thiersch, would outweigh the whole of it. Professor Lister himself is an accomplished microscopist and a very skillful and patient experimenter, and it no doubt seems to him that the results which he has obtained with his apparatus are conclusive; but it is necessary that one should have pursued the same line of investigation to see the force of the argument. What the average surgeon must judge by are results;

¹ See Medical News, Oct. 1876, p. 163.

he wants to know how many times the knee-joint has been opened in this way, and with what sequelæ; how many abscesses of spinal origin have been "Listerized," and what happened as compared with the same number of similar cases treated in the next ward by his unbelieving colleague, Mr. Spence.

No doubt if one will go to Mr. Lister's clinic, and follow his cases, he will be satisfied; but that is a course open to few.

If the managers of the Royal Edinburgh Infirmary would publish fully and accurately the details of all surgical cases treated therein for the last two years, we should probably know what at present we can only conjecture, doubt, or believe.

Professor VAN BUREN's paper on the *Treatment of Aneurism* is an excellent summary of the various modes of treatment of the larger aneurisms, with critical remarks which fully bear out the author's reputation as a practical surgeon. The method of Mr. Tufnell, of Dublin, for the treatment of internal aneurism by rest, position, and diet, is approved; but the use of drugs for slowing the action of the heart or favouring coagulation is looked on with doubt.

We have seen a case of innominate aneurism in which apparent consolidation was brought about by distal pressure and the use of veratrum viride, so given as to keep the action of the heart at about fifty beats per minute, and although the final result was bad, it would seem that veratrum is an adjuvant worth trying, especially since the fact, that the mortality from ligature after compression has failed is greater than if the ligature is used at once, induces Dr. Van Buren to teach that when it is decided to try compression, every means should be used to obtain prompt success, and these failing, that the effort should not be prolonged.

In speaking of gluteal aneurism, the suggestion is made (originally made by Dr. Frank Woodbury¹) that by controlling the artery within the pelvis by the introduction of the hand into the rectum, the old operation could be rendered safe.

It is made clear, as the author states, that "the treatment of aneurism at the present day does not consist, as thirty years ago, in a choice between ligature and compression, but involves judicial weighing of the claims of many remedial measures, and his own conclusions, which were adopted as expressing the opinion of the Section, are as follows:—

"I. Tufnell's treatment of aneurism by rest, position, and restricted diet, offers a valuable resource in thoracic and abdominal aneurism.

"II. It should always be tried in innominate, subclavian, subclavio-axillary, and iliac aneurisms, before resorting to measures attended by risk to life.

"III. For aneurisms of the subclavian and iliac arteries, the Hunterian operation, with our present means of preventing secondary hemorrhage, is not justifiable.

"IV. For reasons formally set forth by Holmes and Henry Lee, the 'old operation' cannot properly be formally substituted for the Hunterian operation in these cases, but should be held in reserve for special cases.

"V. It is the most safe and surgical resource in gluteal aneurism, if the circulation can be commanded by the hand in recto.

"VI. The mode of cure by embolism, aimed at in the method of manipulation, is a not unfrequent explanation of what is called spontaneous cure of aneurism.

"VII. The value of Esmarch's bandage in the treatment of aneurism is probably not fully estimated.

¹ Am. Journ. Med. Sci., Jan. 1874, p. 131.

"VIII. In view of the promising features presented by the cases of Lewis and Bryant, in which horse-hair was introduced into an aneurismal tumour, the repetition of this operation, or the substitution for the horse-hair of Lister's prepared catgut or other animal substances, may be properly tried."

The paper by Dr. SAYRE on *Morbus Coarctatus* gives an excellent account of the symptoms of the disease, and of his methods of treatment, which are characterized by good practical sense, and which undoubtedly give good results. It contains nothing that will be specially new to those acquainted with his previous teachings on this subject, and we will simply notice his second conclusion as being the only one not adopted by the Section, viz., that this disease is almost always of traumatic origin, and not necessarily connected with a vitiated constitution. This was objected to by Prof. Gross, who believes that it can only occur in a person "whose constitution is in a state of degradation, or who is labouring under some constitutional taint." He considers that the matter from an abscess connected with hip-joint disease is of the same character as that expectorated in pulmonary consumption; in other words, that it is essentially scrofulous or strumous.

As remarked by Mr. Lister, "in affections dependent on strumous disease, there are great varieties of pus," and we hardly think that Professor Gross could have intended to assert that there is such a thing as a peculiar, pathognomonic, scrofulous pus. The point is of interest mainly as bearing on the question of treatment, although we cannot assent to Dr. Sayre's statement that if the disease is of constitutional origin, it cannot be cured by local means. So far as causation is concerned, the truth seems to be that some cases are due to injury and some to constitutional causes; but in each class the local method of treatment will give very satisfactory results, and this in part, as pointed out by Dr. Sayre, because it is the best means of putting the patient into such a condition that he can have fresh air, good food, and other things necessary, or at least extremely useful, in removing the constitutional debility or dyscrasia.

Dr. GONLEY reports *A Case of Subperiosteal Excision and Disarticulation of the entire Inferior Maxillary Bone for Phosphorus Necrosis*, but instead of furnishing information, he requests it. This is the germ of a very valuable idea, and may lead to the development of a new field in medical literature, viz., the stating as clearly as may be just what one does not know. It is not so easy to do this as one might imagine, and even Dr. Gonley has not entirely succeeded. In his tabular list of operations, although he carefully refrains from telling where the reports of any of the cases which he indicates can be found, yet this excessive caution will make it difficult for his correspondents to help him. The case given is reported only incidentally, to show what kind of information is wanted, and in what shape it should be given; but one point is not quite clear. He says that "the pathological description of the parts removed will be given elsewhere." Must we infer that those who are to send the reports of their cases to the author for his information should also give the pathology elsewhere?

It is also not clear why no information is desired with regard to removal of anything less than the entire jaw, since there is nothing peculiar that we know of in total excisions performed one-half at a time, over excisions of one-half or two-thirds of the bone; but, as remarked above, the paper was not designed to give information, so we cannot complain.

Dr. MASTIN's article on *The Causes and Geographical Distribution of Calculous Diseases*, gives much less of the geography than we had hoped

to see. He states that he has tabulated over three thousand cases of lithotomy in America, but the tables are not given, and these are the very things which must be given to make such a discussion of permanent interest or value, since it is only after their examination that intelligent criticism is possible.

The remarks of Professor DUGAS upon the *Treatment of Penetrating Wounds of the Abdomen*, although brief, are important, and it is to be regretted that there was no discussion of them in the Section, as we presume was the case from the absence of record. We believe the conclusions of the author to be correct, although his chief premise seems erroneous, for the cause of the rapidly fatal issue in such cases cannot properly be called septicæmia.

Be that as it may, it is highly important that prominent surgeons should give the weight of their authority to the only mode of treatment which offers any hope of success; for, as the matter now stands, the average practitioner is afraid to interfere, in view of the medico-legal complications in which he will probably be involved. Dr. Dugas does not support his opinions by quotations, and writes as if he considered that he is alone in holding them; but this is not the case, as will be seen by consulting the second surgical volume of the *Medical and Surgical History of the War*, pp. 125-128. The matter is of so much importance to all who may be called on to treat such cases, that we will quote from opinions given nearly ten years ago, and which will be found on page 126 of the volume just referred to.

"In regard to penetrating wounds of the abdomen, where there is reason to suspect intestinal injury, it appears to me to be proper to enlarge the opening, if necessary, to ascertain the nature and amount of injury, to remove foreign bodies and extravasated matter, to employ sutures or ligatures where needed, and to cut these short and return the injured viscera. The results of ovariectomy, of operations for strangulated hernia, etc., demonstrate that the dangers of opening the peritoneal cavity and of handling the viscera have been greatly exaggerated. Success in these operations must depend upon attention to minute details, such as preventing lowering of the temperature, perfect cleanliness, etc. Especial care should be taken to prevent even the smallest particle of fecal matter from escaping into the peritoneal cavity, and to remove such as may escape. Ordinary fecal matter contains immense numbers of microzymes, or minute organisms known as bacteria, monads, micrococci, etc., which, if not the direct cause of putrefaction, as seems probable, are, at all events, closely connected with that process. The great danger in these operations probably arises from the sponges and water used, and the less anything but the perfectly cleansed and disinfected hands of the surgeon comes in contact with the peritoneal surfaces, the greater the chance of success."

These, with the exception of the insisting on cleanliness, are substantially the conclusions of Professor Dugas, and are given simply for the purpose of strengthening his position, which we believe to be the only tenable one.

Dr. ADDINELL HEWSON's paper on the *History of Nitrous Oxide Gas as an Anæsthetic, and on the analgesic effects of rapid breathing*, seems to have elicited no discussion, although both the facts alleged and the inferences drawn seem very doubtful.

Admitting that a certain amount of analgesia may, in some cases, be produced by the means indicated by Dr. Hewson, it seems to us that the results may all be accounted for by what we know of the power of expectant belief or attention, and that the cyanotic phenomena are a result, and not a cause.

The observations by Prof. ESTLANDER on the *Temperature of Osteosarcoma* are of interest to physiologists as well as pathologists, since they point to an excessive local development of heat in rapidly growing parts. They indicate a new possible means of diagnosis and prognosis, and it is to be hoped that further data on this point will soon be furnished.

In the Section on Dermatology and Syphilography, the first paper is by Dr. J. C. WHITE, of Boston, on *Variations in Type, and in Prevalence of Diseases of the Skin in different countries of equal civilization*, and it forms an interesting contribution to the subject of medical geography. Incidentally, we learn from it that there are but four specially trained dermatologists in this country, over which fact each reader may lament or rejoice according to his taste.

The article contains statistical tables of 10,000 cases of diseases of the skin as seen in dispensary practice, and an attempt is made to estimate differences in rate of prevalence, not only between America and Europe, but between Boston, New York, and Philadelphia.

The conclusions from the discussion of these tables are as follows :—

“I. Certain obscure affections, the etiology of which is little, if at all, understood, even in those parts of Europe to which they are mostly confined, may be regarded as practically non-existent amongst us. Such are prurigo, pellagra, and lichen exudativus ruber.

“II. Certain diseases directly connected with, and dependent upon poverty and habits of personal uncleanness, are less prevalent in the United States than in those parts of Europe of which we have sufficient statistical information for comparison. Examples of this class are the animal parasitic affections especially.

“III. Some cutaneous affections of grave character, which are dependent upon, or a part of serious constitutional disorders, are of less frequent occurrence, and of milder type amongst us than in Europe in general, or those parts of it where they are endemic. Lupus, the syphilodermata (?), and leprosy, are the most marked instances of this class.

“IV. Certain disorders of the skin, especially those of its glandular systems, and those connected more immediately with its nervous system, are apparently more prevalent with us than in Europe. The most notable examples of the former are seborrhœa, acne, and possibly the heat rashes; of the latter, herpes, urticaria, and pruritus.”

The paper by Dr. G. A. WARD, on *Verrugas*, calls attention to a peculiar disease endemic in certain parts of Peru, concerning which, we have little definite information. The author thinks that the entire literature of the disease is contained in an article by Von Tschudi, unknown to him; a paper in a Lima newspaper, equally unknown; and an article by Dr. J. M. Brown, U. S. N., who is also unacquainted with the literature of the subject, and we therefore think it proper to point out other sources of information,¹ and to supplement the paper a little by a compilation from these. The verrugas, or warty disease, should, with our present knowledge, be classed with the intertropical diseases known as pian, frambœsia, or yaws, the bobus of Brazil, the gallao of Guinea, the Aleppo button, etc. Nothing definite is known as to its cause, for Von Tschudi's statement that it is due to the water, has been disproved by the observations of

¹ *Smith, A.*, Edinb. Med. and Surg. Journ., 1842, lviil., p. 67. *Tschudi, J. J. Von*, Archiv. f. physiol. Heilk., 1845, iv., p. 378. *Oest. Med. Wochenschr.*, 1846, *passim*, and *Wien. M. Wochens.*, 1872, xxii., p. 245. *Salazar, Gaceta Med. de Lima*, 1858, Nos. 38, 39, and in *Med. Times and Gaz.*, 1858, xvii., p. 280. *Dancona*, Etude sur la Verruga, Arch. d. Med. Navale, 1871, vi., p. 255, 2 pl., also reprinted in *Sco. Browne, J. M.*, in *Med. Essays by Med. Officers U. S. Navy*, Washington, 1872, Sco. p. 335, and in *Trans. Med. Soc. California*, 1872-3, p. 173. *Bourse, F.*, Arch. de Méd. Nav., 1876, xxv., p. 353.

Domon, and Domon's theory that it is malarial seems very improbable. The warty tumours which characterize the disease arise from skin or mucous membranes, and in structure, are to be classed as sarcomatous with excessive growth of the epithelial layers; they are very vascular, and often give rise to serious hemorrhage, therein differing from molluscum, to which, in appearance they are analogous. They may be readily confounded with syphilitic nodes, as in one case mentioned by the author, the more so as they are preceded by, or accompanied with osteocopic pains, and while there is no evidence that this disease is connected with venereal, its endemicity and peculiarities will be of interest to the coming philosopher who is to show the bearing of the law of evolution upon disease, and trace the beginnings of syphilis. We find but one autopsy reported, in which case M. Salazar found tumours in the stomach and liver analogous to those on the skin, and also a large number of ulcers in the colon, but it is not clear whether these were due to the disease. The treatment of the disease most in vogue is by diaphoretics and diuretics, among which last Dr. Ward mentions a new one, viz., an infusion of crickets' legs. We do not find this mentioned by other writers, and there is a bare possibility that it may have been confounded with the *huajra*, termed by the Spanish *una degato* (cats-claw) from the hooked thorns on the stalk, which is mentioned by Von Tschudi as the native remedy.

The accounts of the disease given by the various authors to whom reference has been made in the foot note, are conflicting in many respects, and careful and accurate investigations with photographs, temperature-records, analyses of excretions, etc. etc., are much to be desired, for the object of most of the writers thus far would seem to have been to arouse curiosity rather than to satisfy it.

The paper on the *Virus of Venereal Sores, its Unity or Duality*, by Dr. F. J. BUMSTEAD, is a clear and brief statement of existing knowledge on this question. The old doctrine that all venereal sores are due to a single specific syphilitic virus, is now generally abandoned in favour of the teachings of Bassereau, that "some venereal sores are due to the syphilitic virus, and others to a distinct specific virus known as the chancreoid," but within the last ten years a number of experiments in inoculating the products of simple inflammation have been made, from which it would seem that, under certain circumstances, pustules and ulcers may thus be produced which are not distinguishable from chancreoid. At first, it was supposed that such experiments would only succeed on persons who had been affected with syphilis, but this was disproved by experiments made by Dr. Wigglesworth, of Boston, in 1867-8, and which are here reported for the first time.

Pus from simple pustules of acne was inoculated on the forearm, producing pustules, the matter from which was again inoculated with like result. The same results were obtained by Kaposi, several years later, and he was unable to discover any difference between chancreoids and sores thus produced. These facts are considered by Dr. Bumstead to explain the results obtained by Clere, Robert, Henry Lee, Pick, and others, who found that true chancres were auto-inoculable after irritation, thus disproving one of the doctrines of the dualists. The same results have followed experiments on syphilization, and for a time it was thought that they might be accounted for by assuming the existence of a mixed chancre, that is, of a sore which contained both the syphilitic and the chancreoid

virus. But from the results obtained from the inoculation of simple pus, the author believes that :—

“ I. The virus of venereal sores is dual.

“ II. Some venereal sores are due to the inoculation of the syphilitic virus.

“ III. Other venereal sores are due to the inoculation of the products of simple inflammation.

“ IV. These two poisons may be inoculated simultaneously.”

The third conclusion forms the main point of Dr. Bumstead's paper, and this was not adopted by the Section, the general feeling being expressed by Dr. Keyes, who said, that while no doubt pus from simple inflammations may produce ulcers, to say that these ulcers are identical with chancreoid, was going too far. The conclusion adopted was that [“ Science has demonstrated that suppurative inflammatory] lesions which resemble [in certain features, what we know as] chancreoids, may be produced [on various parts of the body] by inoculation with [simple] pus from various lesions.” We have inserted brackets in order to show that by omitting two-thirds of the words, namely those included in the brackets, no loss is incurred. The moral of which is the same as usual.

The papers by Dr. E. L. KEYES, of New York, and Dr. Charles R. DRYSDALE, of London, on *The Treatment of Syphilis*, agree in their leading points, and illustrate the views of the most advanced syphilologists of our day. Dr. Keyes disposes of two prevailing and dangerous errors; one, that a case of syphilis mild in the beginning, requires but little use of mercury, and is not apt to be followed by tertiary, or even secondary symptoms; the other, that mercury is debilitating. As regards the first, he proves, we think, the danger of omitting continued mercurial treatment, even in the mildest forms of syphilis. It is true that the outbreak of tertiary symptoms after long abeyance (in one of the cases given, of thirty years) may be suspected as due to a fresh exposure, but aside from the unquestionable rarity of a second infection, it is fair to suppose that the reporter gives the entire history of the cases. Willbouchewitch showed that mercury in large doses reduces the number of the red corpuscles of the blood, but Dr. Keyes's experiments with the hæmatimetre, published in this journal in January, 1876, and since extensively repeated, demonstrate that in small doses it increased them, and is, in fact, a valuable tonic. The argument upon this point is full and satisfactory.

Alfred Fournier has been thought the most strenuous advocate of long-continued mercurial treatment, but Dr. Keyes even goes beyond that accomplished syphilographer. He administers mercury in minute doses for two and a half to three years, and even longer, “ and in all cases, if possible, until six months, and sometimes a year or more, after the appearance of the last syphilitic symptoms.” Dr. Drysdale advises a similar course of treatment during at least eighteen months. Both writers concur in the statement, which our own observations confirm, that this long-continued mercurial treatment is quite compatible with the health and comfort of the patients. Salivation is, of course, to be carefully avoided, and occasional remittance of the remedy is followed by renewal of its beneficial effects. Dr. Drysdale protests strongly against the use of mercury in soft sores, as advised by J. Hutchinson and others, and we think justly. Ricord and Bassereau should not have lived in vain.

Dr. S. ENGELSTED communicates an interesting account of the *Measures adopted in Denmark to prevent the spread of Venereal Disease*. Encouragement is given to women to apply to the district surgeons for

treatment, and printed instructions "how to know the venereal disease," are distributed to prostitutes, soldiers, and others, that prompt treatment may, as much as possible, be insured; women found infected are required to state, as well as they can, the names of those who have been in contact with them, and such persons are invited to submit to treatment. In the navy, before ships put to sea, the sailors are inspected. Discharged soldiers are carefully examined, and if found diseased, are detained in garrison until cured.

Systematic inspection of prostitutes is in force throughout the kingdom. The examination is made twice a week; the speculum is on all occasions to be used. An objectionable feature seems to be that the certificate of the woman's own physician, when she resides in private lodgings, may be received as to her freedom from infection.

The results of the present law, enacted in 1874, cannot yet be correctly estimated. There is, however, a notable increase in the number of women brought under control who are not known as public women. This class, notoriously the most dangerous, increased from 563 in 1873 to 1027 the next year, and to 1340 in 1875. Dr. Engelsted has found mucous patches nine times as common among women not regularly examined as among the registered prostitutes. The mean of cases of disease for fifteen years was 3.18 for the latter, and 29.04 for the former class.

The Danish "Social evil law" appears to be humane and thorough in its provisions, and its operations will be watched with much interest.

The paper by Dr. BYFORD, on the *Causes and Treatment of Non-puerperal Hemorrhages of the Womb*, and the debate which followed it, are of much practical interest. It seems clear that astringents given by the mouth are of little use in such cases (gallic acid excepted), and that in serious cases local applications only can be relied on. Dr. Goodell calls attention to the value of cinnamon tea, or of cinnamon boiled in milk, in some cases, and the tincture of cinnamon is used largely by Dr. Hodder, of Toronto. The fact that such hemorrhages may be due to malaria, and can be best treated by quinia, was alluded to by Dr. Campbell, and Dr. Parvin advises vaginal injections of hot water; in fact, each speaker seemed to rely on a different remedy, from which we conclude that in many cases almost anything will succeed, if rest and proper position be insisted on.

The paper of Dr. GOODELL, on *The Mechanism of Natural and of Artificial Labour in Narrow Pelves*, is characterized by Dr. Robert Barnes as "the ablest paper that he had ever heard or read upon the subject," which is enough to say as to the matter—while as to style it is perfection. Of criticism on it we have none to make, and the conclusions of the author form the only abstract which can be given. These conclusions are as follows:—

"I. The unaided first-coming head and the aided after-coming head observe in a flat pelvis precisely the same general laws of engagement and of descent. Hence, version here means art *plus* nature.

"II. The forceps, however, applied in a flat pelvis, antagonizes more or less with the natural mechanism of labour. Hence, the forceps here means art *versus* nature.

"III. The aided and the unaided first-coming head observe in a uniformly narrowed pelvis precisely the same laws of engagement and of descent. But version violates these laws. Hence, the forceps here means art *plus* nature; version, art *versus* nature.

"IV. At or above the brim of a flat pelvis, the fronto-mastoid, or even the fronto-occipital application of the forceps, interferes less with the moulding of the

head, and violates less the natural mechanism of labour, than the bi-parietal application.

“V. In the flat pelvis, the vectis aids the natural mechanism of labour, and, therefore, meets the indications better than the forceps.”

In his paper on the *Treatment of Fibroid Tumours of the Uterus*, Dr. W. L. ATLEE gives a classification of these growths which is excellent for clinical and practical purposes. In treatment, ergot and muriate of ammonia are the medicinal agents most relied on, and the rule is laid down that tumours which are harmless to the patient should never receive surgical treatment involving the least danger. In exceptional cases of uterine fibroids, especially in extra-muscular tumours of the subperitoneal variety, when they materially injure the health, and in some cases of recurrent fibroids, extirpation of the uterus by abdominal section is considered warranted.

In the debate which followed, Dr. Barnes remarked very truly that “we need not care so much about the successful cases as about the failures, and also the reasons for the failures;” and Dr. Hodge also called attention to the want of accurate statistics of results of operations for such tumours, which are quite as desirable as for ovariectomy.

The views of Dr. LUSK, on the *Nature, Origin, and Prevention of Puerperal Fever*, are based on an analysis of 1947 cases of deaths from puerperal disease reported in the city of New York from 1868 to 1875, and form a valuable contribution to the literature of this much studied but still obscure class of diseases. Space does not permit of an abstract, and the practical conclusions are of such importance, and so clearly expressed, that we can only advise careful perusal of the whole paper.

The only point on which we have doubts is that the septic form of what is commonly called puerperal fever is “intimately associated with the existence in the tissues of minute organisms which form the connecting link between puerperal fever and erysipelas and diphtheria.” This may be true, but the proof adduced by Dr. Lusk is not satisfactory, and some of his statements are mere assertions without a particle of evidence, as, for instance, that “the ductus thoracicus is the principal channel through which the poison enters the blood.”

Professor J. P. WHITE, of Buffalo, furnishes a paper on *Chronic Inversion of the Uterus*, which, as he says, simply brings forward facts and conclusions already in a great measure laid before the profession.

Dr. White’s method of reducing these inversions is well known, and in his hands it seems to have been very successful. He does not believe that excision of the uterus is ever necessary in such cases, and controverts the opinions of Meadows, Barnes, Every Kennedy, Donn  , and others, as to the difficulty or impossibility of reduction. There is no report of any discussion upon his paper, so that we are in doubt as to whether his arguments were considered conclusive, but must presume that this was the case. Those who attempt to employ his method should, however, bear in mind his warning, that in the period between the commencement and the conclusion of the process of involution of the uterus, when it is undergoing partial fatty degeneration, it is specially liable to rupture, and must be handled carefully—or perhaps better still be let alone until from sixteen to twenty weeks have elapsed from the time of delivery. It is also to be noted that very considerable power of physical endurance on the part of the operator is necessary to success, and herein may lie a part of the secret of Dr. White’s fortunate results.

All the papers presented in the Section on Otology are interesting, at least to the general practitioner; but we have space to notice but two of them. The conclusions of Dr. BUCK's paper on the *Early Treatment of Aural Disease* ought to be borne in mind by every physician in cases of the acute exanthemata in children. In all such cases there is a liability to aural inflammation which often results in chronic otorrhoea—a disease not only disagreeable, but dangerous. "Paracentesis of the membrana tympani, if resorted to during the first few days of an acute attack, and if not carried out too timidly, *i. e.*, if a free incision be made, and not a mere prick, is almost a sure preventive of the subsequent chronic disease."

The second paper to which we would call attention is by Dr. C. J. BLAKE, *On the best Mode of Testing the Hearing of School Children, and of Providing for the Instruction of Partially Deaf Children*. Each physician into whose hands the volume of which we are speaking may come, will do well to bring Dr. Blake's remarks under the notice of those engaged in the instruction of children with whom he may be acquainted, for he may thus be the means of preventing a vast amount of mental and in some cases of physical suffering on the part of the little ones under their charge. Partial deafness in school children is much more frequent than is usually supposed, and the teacher who for the first time tests the hearing of his or her pupils in the manner proposed in this paper, will probably be much surprised at the results obtained, and may be troubled by the remembrance of unjust punishments inflicted through ignorance of the facts thus brought to light.

In the Section on Sanitary Science, the paper on *The Present Condition of the Evidence concerning Disease Germs*, by Dr. T. E. SATTERTHWAITE, of New York, is a fair presentation of existing theories on this subject, and also contains some original observations made by the author and Dr. Edward Curtis upon the nature of the poison of putrid liquids, and on inoculations of diphtheritic membranes, which should be consulted by all who are interested in this subject, and especially by those who propose to investigate it experimentally. The conclusions are negative, or rather indefinite in character; but the experiments of Chauveau, Onimus, and Sanderson, showing that in some infective diseases the contagious matter is particulate, and may be separated from the fluids containing it, are confirmed. It is very doubtful whether the morphology of the very minute bodies to which such inquiries relate will ever be of much service in deciding such questions; and, if it is, photomicrography is the only means of settling the disputes. We are disposed to think that it is to chemistry, physiological tests, and the spectroscope that we must look for aid in this, and that the microscope is useful only as a means of negative proof.

The paper on the *Vital Statistics of Buenos Ayres*, by Dr. G. RAWSON, is a useful contribution to medical topography which calls for no special comment.

Dr. J. M. WOODWORTH furnishes an article on *Quarantine*, which favours that institution, and calls attention to the fact that it should embrace a system of port sanitation. He adopts Dr. Caldwell's explanation of the origin of the name, *viz.*, that it was derived from the forty days' purification of Lent. Hecker's theory seems better: that the period of forty days was adopted because that was supposed to be the limit of an acute disease, a notion probably of Egyptian origin, and connected with the forty days of the flood.

In the discussion which followed, Dr. Vanderpoel, of New York, remarked very truly that "Quarantine has killed more persons than it has saved," and his belief as to cholera "that, if the dejections can be disposed of immediately, the risk of contagion can be prevented," seems to us to be entirely correct, and to be the true principle on which to act.

Following this comes a short notice on *A Universal Pharmacopœia*, by Dr. E. R. Squibb, which is a model of brevity and clearness. He shows that the practical difficulties in the way of making such a Pharmacopœia are probably insurmountable at present, the most formidable one being the providing proper means for its revision from time to time, and that by the time progress in therapeutics has removed the obstacles there will be little need of any effort in the matter.

The last paper in this Section is by Dr. Hunt, on *The Relations of the Pharmacist to the Medical Profession*. It is not easy reading, requiring a sort of mental translation, *e. g.*, "This necessitates as a basic condition, not only of success, but of all experimental investigation, a certified reliability in the articles by which our therapy is tested or applied;" that is, we ought to know that our medicines are what they profess to be; but when this is done, there will be found some sound advice. Whether the remedy proposed, to consider pharmacy as simply one of the medical specialties, and to attempt to obtain pharmacists who shall have a medical education as a basis, and shall be recognized as physicians, is a practicable one, we think doubtful; but that the state of things cannot be much worse in many places we have no doubt, and we welcome anything which looks toward a change.

In the Section on Mental Diseases, the leading paper is by Dr. Kemperster, on the *Microscopic Study of the Brain*. It is a summary account of the results of the examination of one hundred and fifteen cases, and was illustrated before the Section by thirty-six photo-micrographs. In the absence of these it is impossible to judge fairly of the merits of the paper, and in fact it is to be hoped that the article is merely an abstract of an extensive and properly illustrated treatise. No histories of cases or accounts of symptoms are given, so that the pathological appearances described are severed from their proper relations, and can only serve as a brief manual to indicate what other observers should look for. In investigations so uncommon and so difficult as those to which this paper refers, it is necessary to have the data as well as the conclusions.

The article on the *Responsibility of the Insane for their Criminal Acts*, by Dr. Isaac Ray, is excellent from his point of view, but it assumes that the insane criminal should not be held responsible, which is the very question at issue. Having assumed this, Dr. Ray goes on to prove that no one but an expert can tell whether a man is insane or not, and that good reasoning powers and a knowledge of right and wrong may exist in a man who is so insane as, on the assumption just referred to, not to be responsible. The logical conclusion, though not distinctly formulated, is that in all grave criminal cases the decision as to the fate of the criminal should be left to the managers of Asylums for the Insane. The now prevalent distrust of the plea of insanity, which Dr. Ray deprecates, is a very natural result of an examination of the cases in which it has been used. What we had hoped Dr. Ray would have furnished was a discussion of the responsibility question, in which theologic and sentimental arguments should be omitted. What is the reply to the following thesis? Punishment for crime by law is a substitute for private vengeance, and it

is just in so far as it is expedient or useful. It is as expedient to rid the world of the insane murderer as of the sane one, provided public sentiment permits it. It is not admitted that "responsibility" has any more to do with the question than it has with disposing of a mad dog, or of a criminal by birth and education who has committed murder. We say provided public sentiment permits it, for if this sentiment is too greatly shocked, more harm than good is effected. Why is it not quite sufficient to leave the case to an ordinary judge and jury, and provide that no expert be allowed to have anything to do with it?

This is the Benthamistic or utilitarian view of the subject. What is the answer from the utilitarian standpoint?

If it cannot be replied to without bringing in the so-called "moral law" or "Divine law," then the matter does not belong to science, but to theology. We will only add that, if all criminals are to pass into insane asylums, which is the logical result of the responsibility doctrine, it is much to be desired that the asylums should adopt hard labour as one of their means of treatment, and endeavour to make such "irresponsibles" pay their expenses.

Following Dr. Ray's paper comes one by Dr. HUGHES, on *The Simulation of Insanity by the Insane*, which furnishes the reductio ad absurdum to the plea of insanity in criminal cases.

According to Dr. Hughes, the simulation of insanity is itself one of the signs of insanity, so that, if the criminal will only feign a little, he has a sure means of escape. If the simulation is not detected, he is not held responsible; if it is discovered, it is a proof that he was insane, *q. e. d.*

It is no doubt true that the insane are influenced by ordinary motives, such as fear, hope, love of approbation, etc., and that from such motives they may either conceal their delusions or simulate a higher degree or another form of insanity. This view has been expressed more frequently than Dr. Hughes seems to suppose, and, indeed, is the basis of Dr. Conolly's subtle analysis of the madness of Hamlet. Dr. Hughes thinks that criminals are often actually insane while feigning insanity to escape punishment, but the cases quoted scarcely support his position. He refers, for instance, to the case of Lambert, who, in a paroxysm of rage, slew his mistress and another woman. Dr. Parchappe, the official expert consulted, held it to be a case of simulated unconsciousness or forgetfulness after recovery from the paroxysm; Dr. Ray leans to the opinion that the insanity was feigned. Dr. Hughes finds help for his theory in the following pure assumption:—

"May not the simulation have begun before recovery had been completed, after a realization, upon the part of Lambert, that he had committed heinous crimes, from the penalty of which there appeared to him no escape except in assuming unconsciousness of his acts?"

A hysterical lad who feigned contraction of the limbs, spasms, involuntary discharges, inability to move, etc., was detected in his imposture by Dr. Bell, who thus describes the denouement:—

"The spell is broken; the feeble knees are made strong; the convulsed and distorted visage is calm and smooth; and the young deceiver goes forth clothed and in his right mind."

This account would seem to decisively dispose of the case; nevertheless, Dr. Hughes still sees in it insanity simulating insanity, although it was physical and not mental disorder that was feigned. Dr. Hughes does not

furnish any instances in point from the asylum under his charge, but cites an unpublished case communicated to him by Dr. Workman, of Toronto, which, however, does not justify the conclusion he draws. To deny having been in the asylum, and to refuse to recognize the officers whom he had previously known there, may have displayed the prisoner's cunning or sullenness, but cannot be regarded as a simulation of insanity. The general argument is well summed up by Dr. Ray (in the discussion). He says:—

“Most of the insane know as well as other people that insanity is an excuse for crime, and there is no reason why they may not strive to use it as such where occasion calls, by feigning some manifestation of the disease over and above those belonging to their own particular form of the malady. To do this requires no more shrewdness and self-command than it does to conceal their delusions as they sometimes do. The fact that they are already insane does not preclude the need of simulation, for the well-known reason that the insane generally do not recognize their own infirmity. To them the need of the excuse seems just as strong and just as apparent as it would to others.”

This is probably true, but Dr. Hughes's citation of cases in support of it can be regarded only as surmises.

We have not alluded to a number of interesting papers, including all of those presented in the Section on Ophthalmology, and this is simply due to want of space. Those which have been noticed are fair samples chosen almost at hazard, and we will conclude by saying that we have obtained much pleasure and instruction from this volume, and we predict that any one who will examine it carefully will be agreeably surprised.

J. S. B.

ART. XXI.—*The Ear; its Anatomy, Physiology, and Diseases. A Practical Treatise for the use of Medical Students and Practitioners.* By CHARLES H. BURNETT, A.M., M.D., Anral Surgeon to the Presbyterian Hospital, etc. With eighty-seven illustrations. 8vo. pp. 616. Philadelphia: Henry C. Lea, 1877.

As one of the evidences of general growth in a special department of science, may be taken the demand for and production of the so-called text books as distinguished from publications of a more limited character, the text book being a work which shall serve both the purposes of systematic instruction and of occasional reference. To this class Dr. Burnett's treatise may be fairly said to belong, since its comprehensive character gives to the otological student the preliminary instruction which he seeks, and to the practitioner the latest contributions to the branch of medical science of which the book treats.

In his preface the author says that in view of the great advances which have been made of late years in otology, and of the increasing interest manifested in it, he has felt that the profession might welcome a new work, which should present clearly but concisely its present aspect, and should indicate the direction in which further researches can be most profitably carried on.

A detailed review of the work shows that this intention has been faithfully carried out, a due regard having been paid to the proportionate importance of the various subdivisions of the subject.

Part I., comprising one hundred and forty-three pages, is devoted exclusively to the anatomy and physiology of the ear, the remaining four hundred and sixty-three pages being devoted to pathology and therapeutics. By this arrangement a proper sequence is given to the course to be pursued by the student, the value of the work for occasional reference remaining the same.

Part I. falls naturally into three sections, treating respectively of the external, the middle, and the internal ear.

Chapter I. treats of the anatomy and physiology of the auricle, and under the latter heading interesting extracts are presented from the works of Darwin, Ludwig Meyer, J. Williams, Laycock, and others. The quotations on the subject of the comparative functions of the auricle, and the author's own observations on the resonant functions of this portion of the ear, are of particular interest, especially the demonstration of the fact that the auricle, in combination with the meatus auditorius, forms a resonator of a more or less conical shape, closed at the bottom by the membrana tympani, the special function of which is to strengthen by resonance those waves of sound which possess a short wave length, certain portions of the auricle resonating best to high partial tones, while other parts resound best to the intermediate and low partial tones, thus insuring the complete reception by the auditory nerve of all the partial tones which compose any given sound falling on the auricle.

Dr. Burnett has observed that the region of the helix and its fossa resound to the deeper notes, the anti-helix and its fossa to the intermediate notes, and that the concha resounds best to the high partial tones. The conclusions at which he arrives from his experiments are, that the concha is found superposed by nature upon the external auditory meatus, in order to lengthen it, and that the external ear, as a whole, forms a resonator for those tones having wave-lengths, the quarters of which are represented by the various depths of the column of air contained by the external ear. According to these observations, he considers it fair to suppose that the entire apparatus of the external ear in all animals is adapted to strengthening the sounds uttered by them and their species. The absence of a developed auricle in birds not being, in his opinion, an argument against its utility as a resonator in man, for the wave-lengths of the high notes, which the former must both use and hear as a means of intercourse with each other, are so short that they will resound perfectly well in the shallow auditory meatus found in them.

While according a well-merited space to the consideration of the functions of the auricle, the author has omitted to mention the subject of binaural audition, especially interesting in reference to the appreciation of the direction of the sound source, and which is treated of at length in a recent monograph by Prof. Steinhauser,¹ and in a report of experiments of a character similar to those of Prof. Steinhauser, made by Lord Rayleigh.²

Chapter II. treats of the anatomy and physiology of the external auditory canal. Concerning one function of the lining of the canal, the spontaneous removal of foreign bodies, the author quotes Voltolini's observations, and mentions also the fact of a progressive movement from within outward, strongly suggestive of the growth of the nail, the mechanism of this movement in the external auditory canal being as yet unexplained.

¹ Anton Steinhauser. *Die Theorie des Binaurabeh Horeus*. Gerold's Solen, Wien, 1877.

² Rayleigh. *Determination of the Direction of a Sound Source*. *Nature*, 1876.

Chapter III., anatomy of the membrana tympani, gives, in addition to the usual description of its structure, the more recent investigations into the conditions which result in the peculiar form of the membrana, and in the production of that objective point which is so important a consideration in its bearing upon the diagnosis of affections of the membrana tympani and middle ear, the light reflex. This chapter also includes the author's investigations on the comparative distribution of bloodvessels in the membrana tympani, showing a peculiar arrangement of vascular loops in the dog, cat, goat, and rabbit, which is not found in man.

Under Section II., the middle ear, are included the tympanic cavity, the Eustachian tube, and the cavity of the mastoid.

A considerable portion of the first chapter is devoted to the anatomy and mechanism of the ossicles, and includes, taking the admirable experiments of Helmholtz as the starting-point, the later experiments of Politzer, Urbantschitsch, Weber-Liel, Buck, and Burnett.

Chapter II., Eustachian tube and mastoid portion, gives prominence to the subject of the constant patulence of the normal Eustachian tube, a subject which has recently engaged the minute investigations especially of German otologists. The author inclines to the opinion held by Rüdinger and others, that there is a small part of the normal Eustachian tube, the so-called safety-tube in its upper part, under the cartilaginous hook, always wide enough open to allow a recoil of air to occur from the drum cavity if the drum-head is suddenly driven in, and also to permit a slow equalization of pressure in the tympanic cavity from the pharynx, independently of the act of swallowing; but this canal of safety is not wide enough to allow constant ventilation of the drum cavity to go on.

In Section III. thirty-five pages are devoted to the labyrinth and auditory nerve. The more or less elaborate monographs published, especially within the past ten years, having for their subjects the structure and functions of some part or the whole of this portion of the organ of hearing, afford valuable material which has been judiciously availed of for the compilation of the first chapter of this section. The illustrations to this chapter, without which the student would find difficulty in following any description of this complicated apparatus, are taken mainly from the works of Henlé, Waldeyer, and Rüdinger. The clearness of description is much increased by the progressive arrangement of the subdivisions chosen by the author, the subject unfolding itself in natural sequence, and affording a comprehensive idea of the structure of the labyrinth with the least labour to the student. Indeed, clearness and conciseness of description are characteristic of all of the anatomical portion of the work. The subdivision of this chapter on the function of the semicircular canals is a comprehensive review of the recent experiments of Boettcher, Cyon, Mach, Brewer, Curschmann, Löwenberg, and Bernhardt, to whom, as the author says, belong the honour of having conducted the most brilliant physiological experiments of modern times.

In Chapter II. a scheme of the relationship between the middle and internal ear is presented which serves as a sketch of the subject-matter of the preceding chapters, and tends to fix the more important points in the relation of the several parts more clearly in the mind of the student.

Part II. opens with a description of the various instruments and the methods of their employment in the examination of patients. Of the various forms of specula employed, preference is given to the oval speculum of Gruber as corresponding more nearly to the natural diameters of

the auditory canal. The usual objections are urged against the employment of Kramer's bivalve speculum, which is recommended, however, as of use in anterior rhinoscopy. For the purpose of syringing the ear, decided objection is made to the ordinary hard rubber ear syringe on account of the danger of wounding the canal by pressure with the elongated tip. The ordinary hard rubber made syringe No. 2 is recommended in preference. A portion of this chapter is devoted to instructions in rhinoscopy, and especially the examination of the pharyngeal orifice of the Eustachian tube. This leads up to the description of the Eustachian catheter and its use, and proper stress is laid upon the importance of avoiding any risk of contagion by keeping an instrument for the especial use of each patient. This is followed by a concise description of the inflation of the middle ear by means of Politzer's air donche, preference being given to the original method of Politzer over the methods more recently suggested by Gruber and Lucæ.

Chapter II. concludes the section on methods of examination with a thorough description of the means to be employed in testing the hearing, including directions for tests with the watch, tuning-fork, high musical tones, and the voice, especial attention being given to the acoustic character of vowel and consonant sounds as determined by the experiments of Wolf and Appunn.

For tests with the watch, a stop-watch is preferred, as affording a means of avoiding error on the part of the patient, the ticking of this form of watch being under control of the surgeon. The limits of value of the tuning-fork in tests of bone conduction, as more accurately determined by the experiments of Lucæ, are given at length, and the value of tests by means of high musical tones in the differential diagnosis of diseases of the middle ear is recognized. In speaking of the test by means of the voice, allusion is made to the fact of the better hearing of low than of high tones, which the author explains by reference to his experiments on the mechanism of the ossicles, in which it has been shown that a deep note has the advantage of high notes in cases of increased labyrinthial pressure. In an increase of such pressure the stapes becomes more fixed, and it is on this small bone that the vibrations begin to grow less as the pressure within the labyrinth is increased. In such a case it is manifest that, if vibrations from without are normally conveyed to the stapes, there they must meet with hindrance in their endeavour to reach the labyrinth. Only the more powerful sound waves are able to overcome this obstacle, and force the stapes into to-and-fro-motions with the rest of the chain of ossicles. It might be asked, therefore, according to the author, whether the inability to hear high notes in some cases, while low notes are heard nearly, if not quite, normally, could not be construed into a sign that the stapes is impeded, either by undue pressure in the labyrinth, or by catarrhal fixation in the oval window. That the cause of such a peculiar alteration in hearing probably does not lie in an undue tension in the membrana tympani, appears from the well-known physical fact that the tense membrane is more susceptible to vibrations of high notes. In testing the hearing in cases of one-sided deafness, in addition to the tuning-fork test proposed by Knapp, the author employs the following method for a test with the voice:—

The affected ear being turned toward the speaker, and the opposite ear closed, the ordinary test with the voice is made, and the limit of hearing determined. Both ears are then closed, and the test repeated. If the

closure of the deaf ear causes no change in the limit of perception, it is fair to conclude that whatever amount of hearing exists is not due to passage of sound through the external auditory canal of the worse ear turned toward the sound source.

If, however, stopping the deaf ear turned toward the examiner still further diminishes the hearing, the test should be repeated at decreasing distances until the limit of perception is again reached; this is the limit of hearing by conduction of sound through the cranial bones, the difference being the limit of aerial conduction by the external auditory canal.

Section II. describes firstly the organic defects of the auricle, including plurality, abnormal position, and malformations, and the rare form of arrested development resulting in congenital fistula of the ear. Cutaneous diseases of the ear follow next in order, among which may be mentioned the interesting case of a large horny growth from the upper and posterior part of the helix, reported by Dr. Buck, and a case of herpes zoster of the tragus observed by the author. The possible origin of the eruption is not mentioned, however, and in this connection an interesting comparison might be made with the case reported by Dr. Guerdet,¹ in which the eruption was supposed to be the result of irritation of the chorda tympani.

Chapter II. treats of morbid growths, including cysts, angioma, vascular naevus maternus, fibrous tumours of the lobule, for removal of which the operation suggested by Knapp, a modification of the Mirault-Langenbeck operation for hare-lip is advised; an interesting case, in detail, of glandular hypertrophy, epithelial cancer, and othamatoma.

Chapter I. of Section III. is devoted to circumscribed and diffuse inflammation of the external auditory canal. In the former affection, in addition to local applications, particular importance is attached to general treatment, a point which is too often overlooked in dealing with this slight but exceedingly troublesome affection. In diffuse inflammation much importance is properly attached to the examination of the condition of the middle ear, serious implication of this portion of the organ of hearing being much more frequent than would ordinarily be supposed, and too frequently overlooked until it forces itself upon the attention.

The rare diphtheritic form of diffuse external otitis unmentioned by many authorities is also described at length. In the early stages of simple diffuse inflammation, free scarification is recommended, followed by syringing with very warm water to promote bleeding. Moderately cool water would better answer the purpose, as very warm water is often found of use in controlling a copious bleeding. In addition to the several objections urged against the general use of poultices, the author adds one which is worthy of consideration, namely, the danger of implanting aspergillus.

Aspiration by means of Sigle's speculum is also recommended for the purpose of favoring the exudation of the fluids accumulating in the dermoid layer of the canal and membrana tympani.

For touching the small granulations which follow the more severe forms of diffuse inflammation, monochloroacetic acid is strongly recommended on account of the promptness of its action, its cleanness, and thoroughness.

The article on otomycosis reviews the numerous publications which preceded, and especially which followed, the comprehensive work of Wreden, together with an enumeration of the remedies advised, of which the author gives the preference to alcohol, either alone or diluted with water.

¹ *Annales des Maladies de L'Oreille et du Larynx.* Mai, 1877.

For the removal of foreign bodies the use of other instruments than the syringe, unless absolutely necessary, is strongly deprecated, except in the exceedingly troublesome cases of indurated epithelium which follow desquamative inflammation of the canal.

Of the rare cases of foreign bodies impacted in the middle ear and Eustachian tube the three cases reported by Mayer¹ of foreign bodies in the Eustachian tube are quoted; the occurrence of foreign bodies in the tympanic cavity, in consequence of injudicious attempts at their removal from the meatus, are unfortunately much more frequent.

Among the results of inflammation and injury, which subject forms the third chapter, may be noted cholesteatomatous tumours, exostoses, and osseous closure of the canal, including a quotation of Dr. Buck's valuable paper on "ultimate forms of granulation tissue in the ear," and of Dr. Matthewson's successful application of the dental engine to the removal of osseous growths.

The occurrence of acute inflammation of the membrana tympani, as distinguished from inflammatory processes in its contiguous structures, is denied by many authors on the ground that this membrane is so intimate in its structural relations with the external and middle ear that disease originating in these parts may easily manifest itself, particularly in the membrana tympani. Nevertheless the localization of inflammation in either the dermoid or mucous coat of the membrana tympani is of sufficiently frequent occurrence to make it a matter of convenience to recognize such a condition as that to which the term acute myringitis is applied. Under this heading, in the first chapter of section four, the author gives a differential diagnosis between acute myringitis and acute otitis media, which is of practical value. In acute otitis media there is found early in the disease an indrawing of the membrana tympani without thickening, and the redness is limited to the umbilical plexus and the upper periphery. In acute myringitis, however, the membrane becomes first rough and evenly red all over, then thick and infiltrated, but not indrawn.

The pain in otitis media is much more severe than in acute myringitis. In otitis media the secretion is copious and may be either mucous or purulent; in acute myringitis it is scanty and purulent, in the former the febrile and constitutional symptoms are grave, in the latter such severe symptoms are wanting. This chapter further includes the subject of ulcerations of the dermoid layer of the membrana tympani, and of perforation of the membrana flaccida, including the report of five cases of this comparatively rare lesion, which came under the author's observation.

Section V., treating of the middle ear, comprises one hundred and ninety-three pages. Of this space eighty-six pages are devoted to the diagnosis and treatment of acute and chronic catarrh of the middle ear. In addition to the detailment of the symptoms which are made familiar by the prevalence of these affections, the author makes original observations which are worthy of note.

In speaking of the partial vacuum in the middle ear resulting from closure of the Eustachian tube attention is called to the fact of the occurrence of blood extravasation, which may serve to account for some of the rare cases of so-called otitis media hemorrhagica.

The symptom of ear cough has also been especially observed in connection with a slight swelling of the faucial orifice of the Eustachian tube during a head cold, the cough being induced by pressure upon the tragus.

¹ Monatschrift für Ohrenheilkunde, IV., No. 1.

In his observations on the causation of tinnitus aurium the author accepts the vascular theory of Dr. Theobald, the substance of the latter's autograph being presented in extenso.

Under the head of double hearing two original cases are presented, one of differential audition, one ear being normal, and the other a case of sharpening of all musical sounds during an attack of acute otitis media.

Well merited space is given to the subject of acute aural catarrh in children, an affection to which far too little attention is paid, since, even where it does not lead to more immediately serious manifestations of trouble, it may lay the foundation of a more persistent form of progressive disease, which shows itself later in life under conditions rendering it but little amenable to treatment.

In addition to the usually recorded symptoms accompanying chronic aural catarrh one peculiar symptom is mentioned; this is an odour unlike that of either true or false ozæna pervading the majority of patients in the mature stages of chronic aural catarrh, comparable to the odour of the saliva, and due, in the author's opinion, to a disordered condition of the follicles of the mucous membrane of the fauces, mouth, naso-pharynx, and nose. The author's observations on implication of the sympathetic and other nerves, published in Vol. IV., of the *Archives of Ophthalmology and Otology*, are also here reproduced.

Under treatment is included a detailed description of the use of the nasal douche, which is moreover recommended as a valuable adjunct to the treatment of this form of disease of the middle ear, the author never having seen a case of acute inflammation of the middle ear attributable to its use. With regard to the efficacy which is claimed for this means of cleansing the naso-pharyngeal space, there can be no question; with regard to its safety, however, as concerns the integrity of the middle ear there is much and well authorized rebutting testimony. Excision of the tonsils is regarded as rarely, if ever, necessary, for the relief of hardness of hearing or deafness, simply because the altered function of hearing is in no way dependent on the tonsillar enlargement. When associated with deafness, their enlargement is to be regarded simply as a symptom of a catarrhal condition, which has also brought about alteration in the glandular structures. Excision is worse than useless. This opinion agrees in the main with the observations of the late Wm. Harvey, of London, who, however, advocated the excision of the enlarged gland, on the ground that its persistence in the enlarged condition presented a larger surface for the perpetuation of the catarrhal disease in addition to the mechanical irritation to which it might give rise.

Of operative procedures upon the membrana tympani and within the middle ear, especial mention is made of the attempts to maintain a permanent opening in the drum-head and of the operation for tenotomy of the musculus tensor tympani. As concerns the latter, the author gives a full account of the practices and opinions of various writers who have accepted this operation as a valuable contribution to aural surgery, or have practised it for the purpose of testing its merits, withholding his own opinion on the just ground of a want of personal experience as to its efficacy. The application of electricity to the organ of hearing concludes the third chapter. In regard to the intra-tubal electrization of Weber-Liel, the improvement is considered to be due rather to the mechanical effect of the passage of the instrument, a silver wire used as a rheophore, through the Eustachian tube, than to any action of the electric current.

Under the heading, "Unusual Diseases of the Middle Ear," are included cases of objective snapping noises in the ear, due, according to Politzer and Lushka, to spasm in the palatal muscles whereby the anterior wall of the mouth of the Eustachian tube is suddenly drawn away from the posterior wall. This explanation of the peculiar symptom is substantiated by the author in the account of a peculiarly interesting case of the kind coming under his own observation. The extravasation of blood into the tympanum in Bright's disease, as observed by Schwartze and Buck, and the disease described by Roosa under the name *otitis media hemorrhagica*, are also noted.

The observations of Schütz on tubercular disease of the ear, and of Wendt on cholesteatoma are also accorded due recognition.

Under acute and chronic purulent inflammation of the middle ear, in describing the objective appearances accompanying the former, mention is made of a point of diagnostic value, namely that the presence of pus in the tympanum invariably causes bulging of the *membrana tympani*, while an equal amount of mucus usually does not produce a similar effect. This is accountable for by the fact that mucous accumulations are usually accompanied by a greater or less degree of thickening of the mucous coat of the *membrana tympani*, the resistance of the membrane being thereby increased. In the treatment of acute *otitis media* local depletion, or even if this should be for any reason impossible or insufficient, general bleeding is advised; the warm water douche has seemed in some instances to bring about a resolution of the inflammation, and paracentesis of the *membrana tympani* may be employed even before secretion in the tympanic cavity has appeared, with the result of relieving the congestion and tension of the parts. In the treatment of chronic purulent inflammation of the middle ear, while due regard is had to the influence of thorough and frequent syringing, the more heroic measure of forcing fluid through the Eustachian tube as recommended by Van Millingen and Hinton is deprecated. Cleanliness and perseverance are laid down as cardinal and effective virtues in the treatment of this often discouraging form of ear disease. Of astringents the preference is given to zinc, silver, and alum. The possible consequences of chronic purulent disease of the ear are given, as permanent deafness, epileptiform and other nervous manifestations, granulations and polypi, ulcerations of the tympanic mucous membrane with its possible train of periostitis, otitis, caries, necrosis, and fatal implication of contiguous organs. Of the more common complication, granulations and polypi, the following classification is made: 1. Mucous polypi. 2. Fibromata. 3. Myxoma. 4. Angioma; the two latter varieties having been observed but once, myxoma by Stendener, and angioma by Buck.

For the removal of the more common growths, preference is given to the wire snare; and for subsequent application to the seat of the excised growths, nitrate of silver, chloro-acetic acid, and chromic acid are advised. Caustic potash, in some cases a valuable escharotic, is not included. In describing the symptoms and course of that always possible complication of purulent *otitis media*, mastoid disease, well merited reflections are made on the not uncommon neglect of observation of the symptoms which mark the local character of the trouble, and which, if promptly recognized, would lead to effective measures for the relief of what is often vaguely called a cerebral affection.

Diseases of the internal ear, to which Section VI. is devoted, include anomalies of formation, anæmia, hyperæmia and inflammation, traumatic

injuries, the results of cerebro-spinal meningitis, and disease of the labyrinth in consequence of syphilis and typhoid fever; considerable space is also accorded to aural vertigo from chronic catarrh of the middle ear, and from secondary inflammation of the labyrinth.

The subjects of deaf-mutism, and of the relief and education of partially deaf children, form the seventh and last section of a work which is a valuable contribution to the otological library, because it presents in a readily available form the information which is the basis of the first study of the subject of which it treats, and also the most recent observations in anatomy, physiology, and therapeutics. The author's comprehensive knowledge of the literature of his special subject has enabled him to glean from a large mass of available material, at the same time enriching the work with his own original observations.

C. J. B.

ART. XXII.—*Forensic Medicine and Toxicology*. By W. BATHURST WOODMAN, M.D., F.R.C.P., Assistant-Physician to the London Hospital, etc. etc., and CHARLES MEYMOTT TIDY, M.B., F.C.S., Professor of Chemistry and of Medical Jurisprudence and Public Health at the London Hospital, etc. etc. 8vo. pp. 1083. Philadelphia: Lindsay & Blakiston, 1877.

THE appearance of another large work from the press, with the above title, so soon after the recent publication of the new and enlarged editions of Dr. Taylor's *Principles and Practice*, and his *Manual of Medical Jurisprudence*, Prof. Guy's *Forensic Medicine*, and Wharton and Stillé's *Medical Jurisprudence*, certainly argues favourably for an increasing interest in, and an extended cultivation of this highly important branch of science—important alike to medicine and law. Hitherto, neither of these professions, at least in this country, seem to have fully realized the proper status which this subject should occupy in their respective departments. We need hardly remind the reader of the well-known fact, that in very few of our medical colleges does medical jurisprudence receive even a passing complimentary notice in the curriculum of study; and what is, perhaps, even more remarkable, in many of our law schools, it is either entirely ignored, or, as in the case of the Law Department of the University of Pennsylvania, while the *title* of this professorship appears among the others on the programme, the student is informed that attendance on the lectures of that branch is entirely optional, and that it is not required for his law degree! Of course, this affords but a very questionable encouragement to the student of law to interest himself in a branch of science, which is necessarily so interwoven with criminal law; and the consequence has been that our young lawyers, as a rule, avoid this department of their profession altogether, as a subject distasteful to them, from their ignorance both of its principles and practice. We may hope, however, that this prejudice on the part both of college authorities and students will soon be dispelled, and that they will be aroused to a proper appreciation of the true merits of the subject.

The work before us is the joint production of two gentlemen, who, from their hospital and professional connections in London, and from having

been pupils of the late Dr. Letheby, have enjoyed excellent opportunities for qualifying themselves for the task that they have undertaken; and from a somewhat careful perusal of its pages, we take pleasure in bearing testimony to the general fidelity with which this has been accomplished.

The introductory chapter contains a summary of hints to medical experts on the importance of a due acquaintance with the facts of the case in which they are to testify, the proper mode of giving their testimony, and the fees to which they are entitled. The authors say that a professional witness "is not bound in a civil trial, nor always in a police court, to give evidence unless paid his necessary expenses." We are glad to be told authoritatively that such is the rule in Great Britain. In our own country, as the expert unhappily knows, this is not the case, except he is called outside of his own State, when he may make his own terms. But *within* the borders of his State (at least such is the law of Pennsylvania), the expert is compelled, in a *criminal trial*, to obey the mandate of a subpoena from either the prosecution or the defence, no matter if it takes him hundreds of miles from home, and detains him from his lawful business for days; and this for a paltry compensation, less than that of a common day labourer! This we deem to be a grievous wrong, and one which confessedly requires redress.

The rules laid down in another chapter for the *examination of bodies found dead* are judicious, and, in the main, sufficiently explicit. The directions given for removing the stomach and preserving it are not quite as precise as, we think, the importance of the subject demands. We refer particularly, in a case of suspected poisoning, to the necessity of keeping this organ and its contents in a separate vessel, apart from other organs, for the reason that the poisonous solution would readily escape, by imbibition, through the walls of the stomach, and contaminate any other organ in contact with it, as, for instance, the liver, kidney, or spleen, and thus give rise to a false inference on the part of the analyst in relation to the absorption of the poisons into the organ *during life*.

Nothing is said upon the subject of *determining the time of death from the aspect of the body*—a very important medico-legal question, and one which at times occasions no little difficulty in a trial for alleged homicide. This question, of course, turns chiefly upon the changes produced by putrefaction; and this latter again is dependent upon a variety of contingencies. This point constituted an important item in a recent trial for murder at Norristown, Pa. (*Com. v. Wahlen*, Sept. 1877), where the question was as to the identification of a body, which had been partially exposed for upwards of four months.

Chapter IV. commences the important subject of Poisons. In it, a clear, general *résumé* is given of their *modus operandi*, and the causes modifying their action. Under the latter head, too slight a notice is, we think, bestowed upon the effect of the combination of poisons, or the *antagonism of poisons*, although, in a subsequent chapter, the authors make a passing allusion to it. This is a subject which has, of late, attracted considerable attention, from the experiments of Fraser, Bennett, Brimton, and others.

An omission under this head, on the part of the authors, should not, we think, be passed by unnoticed; we allude to the *Post-mortem Imbibition of Poisons*; or the fact that the introduction of a poisonous solution into a dead body, either by the stomach or rectum, or hypodermically, will cause an osmosis of the poison into the adjacent organs and viscera, *e.g.*, the liver, spleen, kidneys, heart, and lungs; and by contamination, these organs might readily give rise to the suspicion on the part of the toxicologist,

who subsequently discovered the poison in them, that death had been actually caused by poison; whereas this had been introduced after death, and for the sinister purpose of fastening suspicion on an innocent person. On page 68, a very brief reference is made to this subject, and Orfila's experiments are alluded to; but the quotation made does not properly apply to the point in question, but has reference simply to the extension of inflammation to contiguous organs. Its important medico-legal bearing will be apparent on a moment's consideration.

The timely advice is given in all cases of suspected poisoning, and especially when the patient survives, never to omit the chemical examination of the urine. Without such examination, we think that the charge of poisoning cannot be sustained, unless there should be some other *positive* evidence of its administration.

The appearances after death by poison are stated with sufficient accuracy and detail, and need no special notice here; as also the diseases that simulate poisons.

The chapter on *Systematic Chemical Analysis* contains many excellent hints for the toxicologist. We notice, however, one or two inadvertences. Thus, in describing the distillation of the suspected liquid, it is stated very properly that "if free hydrocyanic acid be present, it will be found in the distillate" without the previous addition of an acid to the contents of the retort, "but, if the contents were alkaline before distillation, it (the hydrocyanic acid) must have been present in the original liquid as a cyanide." This seems to imply that the hydrocyanic acid would be found in the distillate under the latter condition also, which is not the fact, since the addition of an acid would be first necessary in order to decompose the cyanide. Again (p. 81) there is some looseness in the description of the method of separating the alkaloids, as regards the proper solvents to be employed—ether being recommended for the trial testing, and subsequently chloroform for their more complete extraction. Here it seems to have escaped the authors' notice, that morphia is scarcely at all soluble in chloroform, while it is very soluble in ether.

The remarks upon the importance of obtaining by our tests—especially in a capital case—more than "questionable or doubtful reactions," are much to the point, and deserve the careful attention of the toxicologist; as do also the conclusions about obtaining "microscopic sublimate," which we admit are as exquisitely beautiful, as they are, in our opinion, totally unfitted for practical investigations. . . . These are all very well as confirmatory tests, but nothing more. To build evidence entirely upon them in a criminal case is dangerous in the extreme" (p. 81).

We should have liked to see a timely caution thrown out to the toxicologist in relation to his attaching too much importance to the mere colour of his precipitates as proof of poison. The books abound in illustrations of this fallacy. Another point which is not brought out with the clearness which, in our opinion, it deserves, is the absolute necessity (in cases of metallic poisoning) of extracting *the metal* as the only proper, unanswerable proof of the alleged crime. This last point is, we believe, now insisted on by all modern authorities.

The description of the individual poisons is clear and concise, yet, at the same time, embracing all that is essential to the subject; and, what adds not a little to its value, there is appended to each section a list of cases, comprising the dose, symptoms, and post-mortem appearances, together with the authority for each case. Under the head of *Arsenic*, we

think an unnecessary caution is given—"in exhumation cases, to examine some of the soil of the cemetery, which may contain arsenic from its geological constitution" (p. 155). We had supposed that the idea of *cemetery arsenic*, which was so prevalent in Orfila's day, had become obsolete, and had ceased to be entertained by modern authorities; since it is now well known that arsenic never exists in the soil of cemeteries in a soluble state, and, therefore, the fear of the contamination of a corpse by that means is altogether groundless.

In the chemical examination of the tissues for arsenic, no mention is made of the interesting fact first noticed by M. Scolosuboff, of Moscow,¹ that in dogs (and presumably in man) poisoned by this substance, the brain and spinal marrow are found, after death, to contain a much greater amount of the poison than even the liver. This is a highly suggestive observation, and it deserves to be remembered by the toxicologist in his post-mortem search for arsenic, and, indeed, for other metallic poisons.

In the chapter on *Strychnia*, the authors, when enumerating the different antidotes recommended for this poison, omit all notice of bromide of potassium, an article that has been found to be very efficacious in many instances. Neither is any allusion made to atropia, which, according to Mr. S. Buckley,² exerts a true antagonizing power over strychnia, and which proved an efficacious antidote in a case related by himself.

Under the heading of *Hydrocyanic Acid*, the authors very properly caution against the addition of an acid to the organic liquid before distilling it, since otherwise (unless it were distinctly alkaline) "it might be urged that the prussic acid obtained in the distillate was the result of the decomposition of sulphocyanide of potassium, which is a normal constituent of saliva" (p. 112). In the celebrated trial of Dr. Schœppe, at Carlisle, Pa., in 1872, it was strongly and successfully urged by the defence that the trace of hydrocyanic acid alleged to have been found in the stomach of the deceased, might very properly be ascribed to this very circumstance, inasmuch as the analyst had before distilling added sulphuric acid to the suspected substance, which, it was claimed, had contained prussic acid in the free state. This important toxicological fact has since been distinctly recognized in the last editions of Taylor, and of Wharton and Stillé.

The chapter on the *Examination of Hairs and Stains* contains some excellent remarks on the method of identifying hairs of different origin, and various kinds of fibres, such as linen, cotton, silk, and woollen, when these are found adhering to a weapon smeared with blood, in a case of suspected murder. Here, of course, the aid of the microscope must be invoked, and often with the happiest results. A number of very good enlarged wood-cuts serve to illustrate this subject the better.

We next have described the modes of examining *Seminal and Blood-stains*. In regard to the former, while the assertion is undoubtedly correct, that we should "under no circumstances admit a stain to be seminal, unless you discover complete spermatozoa," we must, on the other hand, not forget the fact so distinctly pointed out by Prof. Casper, and confirmed by others, that spermatozoa do not at all times appear even in healthy semen. Hence, while the presence of the zoosperm is positive proof of the presence of semen, their absence is not necessarily evidence of the contrary; although in a medico-legal case, it would be unsafe to urge this last argument.

Blood stains are treated of with sufficient accuracy and detail, especially

¹ Archives de Physiologie, No. 5, Août et Septembre, 1875.

² Edin. Med. Journ., Sept. 1873.

in relation to their spectroscopic examination. This method of investigation has, within the last few years, attracted considerable attention on account of its extreme delicacy and alleged accuracy under proper restrictions. We regard it as of great value as a corroborative test; but we think it should never be relied on exclusively as evidence, especially in a capital case. It is especially valuable in detecting old blood-stains. Thus, we are told that "Mr. Sorby has been able to identify blood by the spectroscopic after forty-four years; and Dr. Lethely and one of the authors after thirty years." The *chemical* examination of blood-stains is described very concisely,—the *guaiacum* process of Dr. Day apparently not ranking so high in the estimation of the authors as the spectroscopic. It is, however, one which has received the unqualified sanction of Dr. Taylor and others, as being specially adapted to the detection of old stains. Our own experience fully indorses its value in medico-legal investigations.

In relation to the *microscope*, as applied to identify blood-corpuscles and blood-crystals, the authors' description is clear and satisfactory; and as to the possibility of thus distinguishing between human and other blood, a passing notice is given of the important discovery, by our townsman, Dr. J. G. Richardson, of the means of identifying human blood-corpuscles by the use of high powers of the microscope. But, we think, that scarcely sufficient emphasis is here given to this valuable medico-legal fact.

Chapter XX. discourses, at considerable length, on the subject of *Life Insurance* in its different medico-legal bearings; and incidentally to this, various other topics are treated of, such as dentition, variations in the pulse, effects of factory labour, result of vaccination, etc., together with modes of death.

Personal Identity of the Living and the Dead next claims our attention—a subject of much interest, and often of great practical importance, as evidenced by the late famous Tichborne case. The points specially referred to in the identification of the skeleton are age, sex, and height. The usual tables of measurements are given, as those of Stevking, Sue, Orfila, Humphry, Guy, and Taylor. And here the caution may not be superfluous, not to give too positive an opinion as to identity merely from an inspection of the bones, unless there exists some marked peculiarity, either congenital or acquired. As to the identification by the skull alone, we think that this is possible only in exceptional cases, as, for instance, from the state of the teeth and jaw, or from some particular mark or scar. Neither do we believe that, as a general rule, the cranium alone will enable us to distinguish the particular *race* of the individual; for, although there are very marked differences between the *typical* skull, for instance, of a Caucasian and a negro, such as we find them depicted in the books, yet numerous instances occur where the lines of demarcation are so finely drawn, and are so gradually shaded off, that it would be hazardous to venture too positive an opinion in an important case.

The questions relating to *Impotence and Sterility*, which form part of the subject of Chapter XXII., occasionally assume considerable importance in courts of law, as in applications for divorce based upon these grounds; and the aid of the physician is required to decide them. They are discussed in the work before us with sufficient precision, and we notice nothing requiring particular comment.

In alluding to the *Signs of Pregnancy* (Chap. XXIII.), the proper distinction is drawn between the uncertain and the certain signs. Among the former are classed morning sickness, cessation of the catamenia, quick-

ening, mammary changes, enlargement of the abdomen, and kiestine in the urine. Among the latter *ballotement*, changes in the os and cervix uteri, and, above all, the sounds of the foetal heart, distinctly heard. The latter, as we all know, is really the *only* positive, unequivocal sign. No allusion is made (and probably it was scarcely needed) to the difficulty of diagnosing between pregnancy—especially in the earlier stages—occurring in those, fortunately rare, instances of complete retroversion of the uterus, and a uterine tumour with the same complication. From experience, we know this to be not always an easy matter.

As regards the evidence afforded by the *corpus luteum* of a previous pregnancy, or of an abortion, the authors adopt the sound and conservative opinion; not committing themselves as to its being a positive sign; but, at the same time, they state very distinctly the differences between the *corpus luteum* of pregnancy and that of menstruation.

The very interesting question of *Protracted Gestation* in its relation to legitimacy receives a candid examination; the result of which, as derived from numerous observations of undoubted authority, and drawn also from the argument from analogy of the lower animals, is that occasionally in the human female the period of gestation may be protracted to forty-one, forty-two, and forty-three weeks or even beyond this limit from the period of impregnation. This accords with the decisions of the courts both in Europe and the United States. The French law, by the Code Napoléon, allows 300 days; and the Prussian law 302 days. The English law fixes no period. In the United States several decisions have been given; by one of which paternity was allowed in a case where the period of gestation must have extended to 313 days (*Com. v. Hoover*). This case was argued before the late Judge Ellis Lewis, who charged the jury in favour of the prosecution (vide *Am. Journ. Med. Sci.*, October, 1846; with a note from Prof. Atlee, in which he mentions two cases within his own practice where the period of gestation was about a year). The laws of Pennsylvania allow the extreme limit of twelve months for the legitimacy of a child.¹ This is undoubtedly stretching the mantle of charity to its utmost capacity; and we would venture the remark that in all such exceptional cases it behooves the female to exhibit the most *unexceptional* proofs of a previous virtuous character. In the celebrated *Gardner Peerage Case* the illegitimacy of the child, born 312 days after the husband's departure, was affirmed by the House of Lords, not, however, so much on the ground of the protracted gestation, but rather because of the known adultery of the wife.

There is nothing requiring special notice in the description of the *Signs of Delivery*. As is well known, many of these disappear very soon after the recovery of the female, so as to be scarcely, if at all recognizable except in a multiparous woman. This is notably the case in the changes undergone by the uterus. If, however, death occurs very soon after delivery, the diagnosis becomes, of course, easy; the size and general aspect of the uterus, together with the corpus luteum, removing all doubt. In the multiparous female the changes in the conformation and feel of the uterus continue even for years after delivery, by means of which a diagnosis may often be made, especially when the question is between a multiparous and a nulliparous uterus. Dr. Tyler Smith mentions the case of a lady and her maid who were burnt to death together in a hotel in London. Their bodies were so mutilated as to render any recognition by external signs

¹ Wharton and Stillé's *Med. Jurisp.*; vol. ii. p. 52.

impossible; but the lady had borne a numerous family, and the identity of her body was ascertained from the condition of the uterus. (*Man. of Obstet.*, p. 38.)

The succeeding chapter treats of *Malpractice*; but it appears to us to be somewhat strangely out of place here, being wedged in between two other chapters which are devoted to obstetrical jurisprudence. We must nevertheless make a few observations upon it in this position. As the authors remark, fractures and dislocations constitute by far the most frequent causes for actions for malpractice. Some timely cautions are added, to which it would be well for surgical practitioners especially to give heed. We find no allusion made to one particular cause of shortening of the leg, which, though comparatively rare, does nevertheless sometimes occur, namely, severe contusion of the hip, resulting in absorption of the neck of the femur, so as to shorten the limb very markedly, and that without any fracture or luxation. Of course, there need be no mistake in the diagnosis of such a case; but the mere shortening of the limb, after recovery, might very naturally suggest a previous fracture; and in our own experience it was, on one occasion, actually made the ground for a suit for malpractice, based upon an alleged error of diagnosis and treatment. The real state of the case was, however, satisfactorily established, and the charge, which was doubtless brought for extorting money, fell to the ground.

Malpractice in *obstetrical* cases has reference usually to rupture of the uterus, or of the perineum (resulting in recto-vaginal fistula), fatal hemorrhage, and the communication of the poison of puerperal fever or syphilis by the accoucheur. We say nothing here of those cases, fatal or otherwise, connected with the performance of criminal abortion, which properly come under another head. We may dismiss the subject of medical malpractice with this single remark—and it covers the whole ground of the accusation—that the charge can never be sustained against the practitioner, provided he can satisfactorily prove that he has bestowed upon the case the proper amount of skill and attention. In other words, *ignorance* and *negligence* form the only legitimate grounds for the charge.

The next subject that claims our notice is *Rape*; and only one or two points will require attention. Among the signs of virginity, the authors regard an intact hymen as the most positive. This is undoubtedly correct. According to Devergie, a ruptured hymen may be considered as evidence of defloration in 999 cases out of 1000. This perhaps may be going a little too far, since cases have been reported where this membrane has been destroyed in early life by disease or accident. But the converse of the proposition certainly cannot be maintained, namely, that an unruptured hymen is *always* the sign of virginity; since we know from the observations of Parent-Duchatelet, and others that the membrane has been found sound in prostitutes, and that even pregnancy has occurred in women with an unruptured hymen, so that the membrane had to be divided by the accoucheur before delivery could be accomplished.

When speaking of rape upon young children, the authors are careful to draw attention to the frequency of infantile leucorrhœa among children of the lower classes, and living under bad hygienic influences. It is extremely important not to mistake a case of this kind for one of alleged violation, as the muco-purulent discharge and the swelling of the parts might mislead an inexperienced examiner. It has not unfrequently happened that a false accusation has been preferred against a perfectly innocent man, supported by the above-mentioned appearances, and prompted

by sinister motives, such as the extortion of money, or revenge. Casper mentions several cases of this character.

In relation to the commission of rape upon a female while under the influence of anaesthetics, the very important question comes up whether a woman, anaesthetized by ether or chloroform, and probably under the influence of an erotic dream, might not really suppose that she had been violated by the practitioner, whom she had seen by her side only a few minutes before losing consciousness? And might she not, impelled by some motive known only to herself, actually bring a criminal charge against an innocent man, based upon such an hallucination? We deem this to be no mere fanciful idea. There is abundant testimony to show that females while under the influence of ether do sometimes experience amatory sensations; and their own confessions fully justify the position here assumed. Some of our readers will doubtless recollect an important case of this kind which occurred in this city some twenty years ago, in which a criminal charge was preferred against a highly respectable dentist by a female patient, who had been put under the influence of ether. Upon the woman's own evidence solely, *and without any medical examination*, the defendant was convicted, and sentenced to imprisonment. There were circumstances connected with this case that certainly did not justify this conviction; and we hold it to be derogatory both to justice and medical science to presume to arrive at a conclusion, in a case of the above character, without a previous careful medical examination. (For a critical analysis of this case see *Wharton and Stille's Medical Jurisprudence*, vol. ii. p. 201.)

In Chapter XXVI. we have the important topics of *Criminal Abortion and Infanticide* presented to us. Under the former, the authors express their just indignation that "in modern times our unjust laws and more unjust social customs, by making the woman bear almost all the burden of support and the whole of the shame of illegitimate children, have tended to make some medical men look on this crime rather as a charitable action, done to shield a suffering woman, than as it really is a foul and unnatural crime, not only against society, but against a helpless, innocent and defenceless life." (p. 663.)

Did space permit, we might dwell at some length on the frightful and seemingly increasing prevalence of this crime in our own country, not only in cases of illegitimacy, but even among so-called reputable and fashionable married members of society, who do not hesitate to resort to the arts of the feticide, instigated solely by the selfish desire to avoid the expense and inconvenience of an increase in their family!

The usual array of drugs popularly employed for this vile purpose is mentioned, without, however, assigning any special pre-eminence to ergot. Our own opinion has always been that, if there is any article of the *materia medica* that can claim a specific power over the impregnated uterus, that substance is ergot. A proper caution is given to distinguish between a mole, or *hydatidiform degeneration of the chorion* (which is always an evidence of pregnancy) and certain bodies which are occasionally expelled from the unimpregnated uterus, such as dysmenorrhœal casts and clots. The description of the fetal heart and lungs is accurate, as is also that of the changes occurring in both of these organs after respiration has been established.

In determining the proofs of *Live Birth*, it is important to remember that it is now an accepted fact that breathing, and much less crying, is not necessary to establish this point, inasmuch as a child may be born, and live

for many hours without breathing, so far at least as any evidence of this process can be afforded by the lungs; but it may, however, exhibit other proofs of life, such as movements of its limbs and pulsation of its arteries. This subject of live-birth sometimes assumes a medico-legal interest, as, for example, for the purpose of establishing the *tenancy by courtesy*, where the estate of a deceased wife passes to the husband during his lifetime, provided there has been live issue. Here it becomes all-important to prove that the child had been born *living*, no matter how short was the duration of its life. To establish *tenancy by courtesy*, the Scotch law requires that the child shall have been heard to *cry*. This is not the case with the laws of England, or the United States. It should not be forgotten that when the law speaks of the child being "born," it means that it must be completely separated from the mother. Consequently, under the law, it would not, technically, be infanticide to destroy an infant that was even crying vigorously, provided it was not completely extruded from the mother, but only its feet were retained! As the authors justly remark, this is a direct encouragement to child murder.

In examining cases of suspected *Infanticide* we should not lose sight of the fact that many children are born dead, and that many others perish at or soon after birth from various causes quite independently of violence. This will, of course, suggest the necessity of making a careful post-mortem examination in every such case that may fall under our notice.

We pass by the subjects of *Paternity* and *Superfœtation* as offering nothing specially worthy of notice here, and come to Chapter XXVII., which treats of *Unsoundness of Mind*. This chapter opens with a very just reflection on medical witnesses "making so poor a figure in the witness box in cases of insanity." Several reasons are assigned for this, among which is one which we quite agree with the authors in hoping may "soon be a relief of the past," namely, "a deficient preliminary education in many members of our profession."

We shall not attempt to give anything like a systematic analysis of this chapter, but will content ourselves with a brief notice of a few of the more prominent points of a medico-legal character. These may be included under the two general heads of (1) Civil Responsibility, or the capacity for attending to one's own affairs or business; and (2), Criminal Responsibility, or responsibility for the commission of crime. Under the former of these divisions is included the capacity to make a will, to contract a marriage, to convey property, or execute any other contract. Under the second, should be considered the *plea of insanity*, which of late years has been so frequently urged as a bar to punishment in trials of the most flagitious criminals, that it should be admitted only with the most scrupulous caution by judges and juries.

As regards the capacity for making a will, the law allows considerable latitude to the testator, so far as his mental condition is concerned. Even if he be a lunatic, provided he has "lucid intervals," he may, in one of those intervals, execute a lawful will. Cases have been decided in the courts which go to show that a state of mind for which a party might be placed under interdiction, or deprived of the management of his affairs, would not render him incompetent to make a will. The *test of capacity* here is, Does the person know the nature of the act which he is performing, and is he fully aware of its consequences? If the act then is rational, and in accordance with what might reasonably have been expected from him, it would certainly be allowed. Even the commission of suicide,

which is often hastily assumed to be the evidence of insanity, is not to be considered as proof of this state, although a testator had destroyed himself a few days after he had executed a will and the will has been held to be valid. We should also be careful to draw the distinction between *eccentricity* and *delusion* in pronouncing upon the validity of a will. The will of an eccentric man, as has been rightly observed, is such as might always have been expected from him: it is perfectly consistent with his known character; but the will of one laboring under a delusion is different from that which he would have made in his natural condition of mind. Certain it is that the courts have affirmed the validity of some very eccentric wills, as in the case of *Morgan v. Boys* (as quoted by Dr. Taylor), where the testator, after bequeathing the bulk of his property to his house-keeper, had directed that his executors "should cause some parts of his bowels to be converted into fiddle-strings, that others should be sublimed into smelling-salts, and that the remainder of his body should be vitrified into lenses for optical purposes." Here, certainly, was eccentricity enough; but the testator exhibits his consistency of character, when he subsequently adds in a letter: "The world may think this is done in a spirit of singularity or whim, but I have a mortal aversion to funeral pomp, and I wish my body to be converted into purposes useful to mankind." This will was pronounced valid, although the heirs-at-law endeavoured to set it aside. In concluding this subject, we would ask with all candor and humility, "Who shall presume to define the precise limits of mental capacity, or who will venture to draw the line exactly which separates mere eccentricity from positive derangement?"

The different varieties of Insanity, together with its causes, are treated of in the usual manner, and at sufficient length; these require from us no special notice. Some very good hints are given as to the proper method of examining suspected lunatics, and also as to the rules to be followed for detecting cases of feigned insanity. A number of cases taken from different authorities, and illustrating the various conditions described by the authors, are appended; and these are followed by some general rules for detecting *feigned bodily diseases*.

Under the head of *Various kinds of Death from Apnœa (asphyxia)*, we find included drowning, hanging, strangulation, suffocation, and death from the inhalation of poisonous gases, and from anæsthetics. There are so many points of resemblance in these various modes of death that there would seem to be a propriety in thus grouping them together. We must not, however, forget that there are certain peculiarities pertaining to each, which deserve the consideration of the legal physician. In hanging it should not be forgotten that neither the presence of the cord about the neck, nor even the mark of the cord, is absolute proof that this was the actual cause of death; since it has been shown that if a body be suspended soon after death, the mark of the cord will be visible. In ordinary cases of hanging, whether by suicide or judicially, contrary to the popular belief, the neck is seldom broken. To insure the fracture of the cervical vertebra, or of the odontoid process, it is requisite that the knot should be placed under the chin, and that the fall of the body should be much greater than it ordinarily is, or that a violent rotatory motion should be given to it, as it is swung off the drop. Usually death by hanging is caused chiefly by asphyxia, but partly also by apoplexy. It is important also to remember, as a medico-legal fact, that death by hanging may occur while the feet or knees are resting on the ground—a very slight degree of pressure

upon the windpipe soon producing unconsciousness in the victim, and rendering him perfectly helpless. Whilst death by hanging (except judicial) is usually presumptive of suicide, death by *strangulation*, which resembles the former in many respects, is nearly always to be ascribed to homicide.

Chapter XXIX. treats of *Death produced by Lightning, Cold, Heat, Starvation, and Burns*. There is nothing under these heads requiring any special notice on our part, the text being sufficiently full on all these different subjects. Under the head of *burns*, an important medico-legal point to establish is, Are blisters, or vesications, on a dead body positive proof that death was caused by fire? As the result of numerous experiments, it has been determined that although vesications may be produced on a *dead* body by the application of heat, this can only be effected very soon after death, and chiefly in dropsical subjects; and, moreover, these post-mortem vesications differ from the others in containing either gas or air, or else a thin serum very poor in albumen.

Under the same head the subject of the *Spontaneous Combustion of Human Beings* is briefly discussed. The many extraordinary accounts that have been given of this alleged phenomenon, partake so strongly of the marvellous and romantic, and the alleged facts themselves are so entirely opposed to the known and established laws of science, that it is impossible to give our assent to them. An examination of all the recorded cases, moreover, will show there was in every instance a lighted candle, a pipe, or some other means by which the combustion may have been commenced.

The last chapter of the book treats of *Wounds* and their sequences, in relation to legal medicine. Inasmuch as very many cases of violent death are the result of wounds, it is, of course, of the utmost importance that the forensic physician should be thoroughly acquainted with this division of his subject; and to do this he must enter somewhat extensively into the domain of surgery. The remarks of the authors are generally sound and judicious; they do not require any special notice by us. A very good table is given, showing the difference in the appearances of wounds in the living and the dead—an important point to the examining physician in the case of bodies found dead.

In the section on *Gunshot wounds*, the authors enter somewhat into detail in their description of fire-arms, ancient and modern, together with the flights of bullets and shells; and they invoke the aid of the higher mathematics in a somewhat elaborate exposition of the *law of projectiles*, all of which, though very interesting to students in gunnery, will scarcely prove as attractive to the forensic physician.

The remarks on *Wounds of Special Regions* are judicious and practical, and sufficiently comprehensive. The importance of distinguishing between *compression of the brain* and intoxication is very properly insisted on, and the means of diagnosis accurately described.

We have thus endeavoured to take a survey, although a somewhat hasty one, of the different subjects treated of in this very copious work. From our remarks it will be gathered that we think highly of the book. It has been, we believe, carefully and conscientiously prepared; and although there is nothing very original in its pages—the same information being obtainable from other standard authors—it, nevertheless, presents the subject of forensic medicine to the reader in a very attractive form; and it cannot fail to be useful to the student and practitioner of this department of science. The book is well illustrated by means of several excellent chromo-lithographs and numerous wood-cuts.

J. J. R.

ART. XXIII.—*Fat and Blood; and How to Make Them.* By S. WEIR MITCHELL, M.D., Member of the National Academy of Sciences, etc. 12mo. pp. 104. Philadelphia: J. B. Lippincott & Co., 1877.

THIS is a book to give impulse to medical thought, and to make a permanent impression on medical practice. It has a mission. It appeals to common sense, and although many of the facts and statements are based on abstruse physiological knowledge, everything seems so familiar that we wonder these things never occurred to us before. The book suggests more than it teaches. Your machine-doctor, reading it, has his eyes opened; but he is troubled as well as amazed. He finds in it nothing about "altering the secretions;" nothing about "rousing the liver to action," and similar old-time phrases. In our immediate past, fat could not be made, nor blood either, without some treatment addressed to the secretions. The medical iconoclasts of our time seem bent on destroying the relics of the past, and with the relics, the happiness of the old family doctor.

Although we have numerous books devoted to food and diet, and to the physiology of digestion, but little has been done to adapt physiological principles to the practical needs of digestion therapeutics. Alteratives, restoratives, tonics, etc., occupy a large space in our systematic treatises; yet the greatest of all restoratives, and, indeed, the only one which exerts a permanent influence—food—is practically ignored by therapeutical writers. If the instructors of our medical practitioners neglect so important a subject as alimentation in diseases, it need occasion no surprise that so many routine practitioners pay but little attention to dietetic regulations. They may be fruitful enough in the resources of the *materia medica*, but are barren as respects those modifications of diet appropriate to particular indications. The only medicines prescribed by Dr. Mitchell in *Fat and Blood* are iron, and the extract of aloe to relieve the constipation caused by an exclusively milk diet, and strychnia as a nerve stimulant.

Fat and Blood is especially concerned with certain nervous maladies. They are so admirably depicted by our author, that we quote his description of them:—

"It includes that large group of women, especially, said to have nervous exhaustion, or who are described as having spinal irritation, if that be the prominent symptom. To it I must add cases in which, beside the wasting and anæmia, emotional manifestations predominate, and which are then called hysterical, whether or not they exhibit ovarian or uterine disorders.

"Nothing is more common in practice than to see a young woman who falls below the health-standard, loses colour and plumpness, is tired all the time, by and by has a tender spine, and soon or late enacts the whole varied drama of hysteria. As one or other set of symptoms is prominent, she gets the appropriate label, and sometimes she continues to exhibit only the single phase of nervous exhaustion, or of spinal irritation. Far more often she runs the gauntlet of nerve-doctors, gynaecologists, plaster-jackets, braces, water-treatment, and all the fantastic variety of other cures.

"I see every week—almost every day—women, who when asked what is the matter, reply, 'Oh, I have nervous exhaustion.' When further questioned, they answer that everything tires them. Now, it is vain to speak of all of these cases as hysterical, or, as Paget has done, as mimetic.

"But no matter how it comes about, the woman grows pale and thin, eats little, or if she eats does not profit by it. Everything wearies her—to sew, to write, to read, to walk—and, by and by, the sofa or the bed is her only comfort. Every

effort is paid for dearly, and she describes herself as aching and sore, as sleeping ill, and as needing constant stimulus and endless tonics. Then comes the mischievous rôle of bromides, opium, chloral, and brandy. If the case did not begin with uterine troubles, they soon appear, and are usually treated in vain, if the general means employed to build up the bodily health fail, as in many of these cases they do fail. The same remark applies to the dyspepsias and constipation, which further annoy the patient and embarrass the treatment. If such a person is emotional, she does not fail to become more so, and even the firmest women lose self-control at last under incessant feebleness. . . . If no rescue comes, the fate of women thus disordered, is at last the bed. They acquire tender spines, and furnish the most lamentable examples of all the strange phenomena of hysteria."

Who has not seen many cases thus masterly described? Who does not know now many examples of these invalids, bed-fast for years and slowly dying, in the community immediately about them? The importance of a right understanding of the nature of these cases, and of the means of cure, can hardly be overestimated. They are usually regarded as hysterical, and the resources of an ordinary general practitioner powerless even to alleviate. Dr. Mitchell, actuated, doubtless, by the highest motives, lays his methods before his readers with perfect frankness, and he enters into minute details with a carefulness which shows that he desires all to profit by his exceptional skill. His method consists in "a combination of entire rest and of excessive feeding, made possible by passive exercise obtained through the steady use of massage and electricity." Before he enters upon the consideration of these means of treatment, our author discusses the subject of "fat in its clinical relations." Heredity, and the means and opportunities of life, have an undoubted influence; climate, still more, in the production and deposition of fat. The remarkable disproportion in the obesity of American and English men and women, especially the latter, has been frequently commented on by writers, and is invariably noted by travellers. Hawthorne in *Our Old Home* makes frequent mention of the fatness of English women, and his remarks are not always characterized by that refinement and delicacy of sentiment, which we expect from the author of the *Scarlet Letter*. The freedom of his criticisms and its sometimes coarseness, and his patriotic advocacy of the superior charms of the thinner American women, caused extreme indignation among the more cultivated classes of our English cousins. The following extract from his paper on Leamington Spa will, we think, justify the observation above made on the unexpected indelicacy of Hawthorne's comments on the stoutness of English women:—

"I have heard a good deal of the tenacity with which English ladies retain their personal beauty to a late period of life; but (not to suggest that an American eye needs use and cultivation before it can quite appreciate the charm of English beauty at any age) it strikes me that an English lady of fifty is apt to become a creature less refined and delicate, so far as her physique goes, than anything that we western people class under the name of woman. She has an awful ponderosity of frame, not pulpy, like the loose development of our few fat women, but massive with solid beef and streaky tallow; so that (though struggling manfully against the idea) you inevitably think of her as made up of steaks and sirloins. When she walks, her advance is elephantine. When she sits down, it is on a great round space of her Maker's footstool, where she looks as if nothing could ever move her. She imposes awe and respect by the muchness of her personality; to such a degree that you probably credit her with far greater moral and intellectual force than she can fairly claim. Her visage is usually grim and stern, seldom positively forbidding, yet calmly terrible, not merely by its breadth and weight of feature, but because it seems to express so much well-founded self-reliance, such acquaintance with the world, its toils, troubles, and dangers, and such

sturdy capacity for trampling down a foe. Without anything positively salient, or actively offensive, or indeed unjustly formidable to her neighbours, she has the effect of a seventy-four gun ship in time of peace; for while you assure yourself that there is no real danger, you cannot help thinking how tremendous would be her onset, if pugnaciously inclined, and how futile the effort to inflict any counter-injury.

"You can meet this figure in the street, and live, and even smile at the recollection. But conceive of her in a ball-room, with the bare brawny arm which she invariably displays there, and all the other corresponding developments, such as is beautiful in the maiden blossom, but a spectacle to howl at in such an over-blown cabbage-rose as this."

The tendency to the deposition of fat, which is so marked a characteristic of our English cousins, has been ascribed to their habits of life, and to the climate of England. The better classes, able to provide according to their inclination, habitually consume a large quantity of animal food, and they are not less given to the use of malt liquors and wines. The insular climate of England is not disturbed by the rapid and extreme variations of temperature, characteristic of the climate of the United States. The moisture not less than the uniformity of the English climate favours the acquisition of fat, by lessening tissue waste. Given the same social surroundings, the same hearty appetite, the same generous supply of animal food and liquors, the same result in fat forming could hardly occur to the American, because the dry atmosphere, and possibly the extreme variations of temperature, too much increase the rate of tissue metamorphosis. Hawthorne makes the observation that he had seen no facts which demonstrated that the obese English woman could execute more tasks, or endure more, than our thinner American woman.

It is probable that the supposed unfavourable influence of the climate of North America on the first settlers and their immediate descendants, does not continue, for a change in the opposite direction seems to be, slowly, taking place. The men and women of thirty-five belonging to the well-to-do-classes, and of the present generation, exhibit a marked tendency to obesity. For example, an accurate observer, visiting at Saratoga, during the season, must be impressed by the large proportion of men and women, especially the latter, who are on the verge of *embonpoint*. These examples do not alone come from the Atlantic coast, but also from the dumb uniformity of our western prairies.

But we must return from this digression to the subject more immediately before us—to fat and blood. Our author entertains lofty notions of the office of fat in the body of man. In referring to the condition of a patient, and whenever he mentions blood and fat in the same sentence, he always mentions fat first, and blood second. The book is an apotheosis of fat. We believe that he unconsciously exaggerates the importance of "fat in its clinical relations."

It cannot be denied that fat occupies an influential position. A little fat is necessary to the stomach digestion, although it does not itself undergo solution and absorption in that organ. If the fat taken with the food fail of digestion, in consequence of disease of the organs concerned, rapid emaciation ensues. It is fat that forms "the molecular basis of the chyle." Fat is essential to the hepatic functions, and it enters largely into the composition of nervous matter. Besides its office in giving roundness and symmetry to the human form, which is an æsthetical question, fat is indispensable to the healthy activity of the locomotive organs, to prevent friction and to ease their motions. Whilst we freely admit the truth of the

physiological exposition of fat put forth by our author, we must differ from him as respects the supreme importance of this material. In the remarkable results obtained by Mitchell, we cannot fail to see that it is not alone fat which accomplishes the object. The gain in weight is far from being due entirely to fat. Under the improved conditions to which the subjects the patients, all the anatomical elements increase in dimensions—a physiological hypertrophy. That our author has a similar opinion, is intimated in the following paragraph:—

“Looking back over the whole subject, it will be well for the physician to remember that increase of fat, to be a wholesome condition, should be accompanied by gain in quantity and quality of blood, and that while increase of flesh after illness is desirable, and a good test of successful recovery, it should always go along with improvement in colour.” (p. 21.)

We would go further than this, and say, that if the increase in the volume of all the organs and in the locomotive apparatus, was manifested in strength and endurance of muscles, in the vigor of the cardiac movements, in an elevated tonus of the arterial system, and in an equable state of the nervous matter, we should regard any considerable deposition of fat as undesirable.

Under the admirable method of our author, an increased tissue metamorphosis ensues; the appetite improves with the demand for material; the blood is enriched in all of its constituents, and the thirsty tissues are flooded with a more generous pabulum. We would say, Blood and Tissues—how to make them.

In Chapter III., little more than a page, our author indicates with remarkable felicity the need of isolation and seclusion in certain cases.

“It is rare to find any of the class of patients I have described so free from the influence of their habitual surroundings as to make it easy to treat them in their own homes. It is needful to disentangle them from the meshes of old habits, and to remove them from the contact with those who have been the willing slaves of their caprices. . . . I am now speaking chiefly of the large and troublesome class of thin-blooded emotional women, for whom a state of weak health has become a long and almost, I might say, a cherished habit. For them there is often no success possible until we have broken up the whole daily drama of the sick-room, with its little selfishnesses, and its craving for sympathy and indulgence.” (p. 35.)

The question of “Rest,” which our author takes up in Chapter IV., is an exceedingly difficult subject. Most practitioners of the present time, who pursue physiological rather than empirical methods, decide the question of rest according to the habits of life, the nature of the malady, and the need of additional oxygen to complete the conversion of chylous fluid into blood. In a few vigorous sentences, Mitchell tells us the kind of patients to be made to take up their bed and walk: the lazy valetudinarian; the hysterical incompetent. The class of cases requiring rest have already been distinctly defined by Dr. Mitchell. The amount and kind of rest are indicated in the following paragraph:—

“In carrying out my general plan of treatment, it is my habit to ask the patient to remain in bed from six weeks to two months. At first, and in some cases for four or five weeks, I do not permit the patient to sit up, or to sew, or to write or read. The only action allowed is that needed to clean the teeth. In some instances, I have not permitted the patient to turn over without aid, and this I have done, because sometimes I think no motion desirable, and because sometimes the moral influence of absolute repose is of use.”

No one can possibly fail to appreciate that in many diseases enforced rest is indispensable. Is it certain that in those patients who become fatigued with the slightest possible effort, there is a condition of defective nutrition? May not this state be due to a long-established in-door life? Patients, women especially, disinclined to exercise, become fond of the uneventful routine of the house, and their inclinations are ultimately seconded by an increasing incapacity for all sorts of physical exercise. If they add to the physical weakness thus engendered a considerable deposition of fat, it is not surprising that the slightest effort is followed by overpowering fatigue. Although the method of Mitchell is entirely successful with such cases, yet it appears to the writer that a system of graduated exercises, beginning with the least effort that does not produce fatigue and continued patiently by slight daily additions of work, will ultimately succeed in a great majority of cases. The writer bases his opinion on various cases conducted to a successful issue by such a method of graduated physical exercises. In the instances of so-called "hysterical joints," long disuse has rendered the joints exquisitely sensitive. A few days of friction and passive motion ought to precede the efforts to exercise.

One of the most important methods of cure practised by Mitchell is *Massage*. Our author was induced to undertake, systematically, this method of cure because he had observed that very striking results were obtained by "rubbers," "Swedish movements," etc. He has, of course, greatly improved the methods followed by empirics, and he thinks he has "some facts to relate in regard to it, which are not known on either side of the Atlantic." There can be no doubt of the substantial accuracy of this statement. Previously to Dr. Mitchell's investigation massage was used by a few specialists in neuro-pathology, but besides these, it is safe to say, that massage was only used by "rubbers," and the practitioners of the Swedish movements.

Notwithstanding so little was known of massage in this country, this subject had received adequate treatment abroad. Thus we find that Troussseau and Pidoux have included this subject in the *materia medica*, and have given a full discussion of its mode of action and therapeutical effects. —(*Traité de Thérapentique et de Matière Médicale*. Huitième Edition. Par Constantin Paul. Tome Second. Paris, 1869.)

In their historical summary, these authors show that massage is an old expedient, that Hippocrates, Praxagoras, Caelius Aurelianus, and others distinctly refer to it, and that several elaborate French memoirs have been devoted to it. There can be no doubt, however, that this subject has been brought to the highest efficiency by Mitchell, and that for the first time by his efforts it has been placed upon a truly scientific basis. He thus describes the method as used by him :—

"After a few days of milk diet with which my treatment ordinarily begins, the masseur or masseuse is set to work. An hour is chosen midway between two meals, the patient lying in bed, the manipulator starts at the feet, and gently but firmly pinches up the skin, rolling it lightly between his fingers and going carefully over the whole foot, then the toes are bent and moved about in every direction, and next with the thumbs and fingers the little muscles of the foot are kneaded and pinched more largely, and the interosseous groups worked at with the fingertips between the bones. At last the whole tissues of the foot are seized with both hands and somewhat firmly rolled about. Next the ankles are dealt with in like fashion, all the crevices between the articulating bones being sought out and kneaded, while the joint is put in every possible position. The leg is next treated, first by surface-pinching, and then by deeper grasping of the areolar tissue, and last by industrious and deeper pinching of the large muscular masses, which for

this purpose are put in a position of the utmost relaxation. The grasp of the muscles is momentary, and for the large muscles of the calf and thigh both hands act, the one contracting as the other loosens its grip. In treating the firm muscles in the front of the leg, the fingers are made to roll the muscle under the cushions of the finger-tips. At brief intervals the manipulator seizes the limb in both hands, and lightly runs the grasp upward, so as to favour the flow of venous blood-currents, and then returns to the kneading of the muscles."

Although it cannot be denied that massage has great antiquity, and is now freely used on the Continent, still to Dr. Mitchell is due the credit of having brought it forward in this country, of having increased the range of its influence, and of demonstrating its physiological actions. Although it has been noted by Trousseau that the increased warmth of the skin produced by massage is due to the more active cutaneous circulation, it was reserved to Dr. Mitchell to put this point on an exact scientific basis by a series of accurate thermometric observations. Influenced by his example and stimulated by his success, we venture the prediction that massage is destined to become the fashion, and to be applied in the treatment of all sorts of ailments, quite irrespective of the fitness of things.

The third expedient of our author's therapeutical trinity is Faradism. The electrodes are so applied as to cause muscular contractions: one being placed on the belly of the muscle; the other over the motor nerve passing to the muscle. As the object to be accomplished is muscular contraction, and consequently muscular exercise, only that strength of current necessary to move the muscles need be employed. Dr. Mitchell's experience confirms the results obtained by Beard and Rockwell in their method of general electrization.

The muscular exercise produced in this way is equally as effective in respect to the condition of the muscle as if the contractions were due to a volitional impulse. It has been shown lately that the principal part of the body-heat is consequent on the interchanges of waste and repair in the muscular tissue. Complete immobility of the muscles lessens the temperature in certain animals—notably in rabbits. A muscle made to contract under a bell-jar gives off a great quantity of carbonic acid. These physiological data are entirely confirmatory of the observations made by Mitchell.

Our author has ascertained the entire correctness of a statement put forth by Beard and Rockwell, that an induction current of fifteen to thirty minutes' duration passed through the body by means of one pole on the neck and on either foot, has decided tonic property if persistently used for some time. Mitchell has, also, ascertained the remarkable fact that this application causes in "many people" a decided rise of temperature. He describes as follows this particular application:—

"At the close of the muscle electrization, one pole is placed on the nape of the neck, and one on a foot, for fifteen minutes. Then the pole is shifted to the other foot, and left for a length of time. The primary current [of a Faradic instrument] is used as being less painful, and the interruptions are made as rapid as possible, while the central wires or cylinder are adjusted so as to give a current which is not uncomfortable." (p. 70.)

In the seventh and last chapter, Dr. Mitchell discusses dietetics and therapeutics. Why dietetics? Is not food, applied with special reference to the needs of particular cases, a therapeutical agent? In this chapter our author enlarges on the "milk-cure," a method which he has not simply popularized, but illustrated, by its successful adaptation to the treatment of difficult cases. The milk-cure is as ancient as Hippocrates. Within a

few years it has been revived by the Montpelier school. We owe to Pecholier, Caryl, Mitchell, and others, the present exact knowledge in regard to its effects and uses. The milk diet, of skimmed milk exclusively, is employed to accomplish the following ends:—

To deplete by a gradual denutrition process; and to reconstruct, by a slow molecular disintegration and renewal of the anatomical elements; to relieve the chylopoietic viscera of existing derangements; to give the suffering organs rest, and in this way put them in a condition to do more satisfactory work thereafter. Mitchell usually commences the treatment of his cases by the milk-cure, and he subsequently enlarges the dietary by the very gradual addition of suitable articles. The accumulation of fatty tissue occurs *pari passu* with an improved condition of the blood. The organs and tissues supplied by blood of richer quality improve in their nutrition, expand to their proper dimensions, and functionate more perfectly. The increased well-being of all parts of the body thus adequately supplied with material, is not more conspicuously exhibited in the increased amount of fat than in the growth of muscular and gland tissues.

The means of treatment pursued, and the results achieved, are quite independent of drugs. Most of the cases had been subjected to the treatment by drugs, and especially by iron, before coming within the beneficent influence of the new *regime*. But Dr. Mitchell does use a few drugs; he gives iron, and in enormous doses, and he occasionally prescribes strychnia when convalescence is fairly established. The ferruginous preparations which he prefers are the old subcarbonate, and the newly-introduced dialysed iron. But iron is, properly speaking, a food, and a very important one.

Our author closes his book with the statement that the assistants who have conducted the various details of the treatment "have come, at least, to be amply satisfied by repeated experience of the exceptional value of the treatment, which I now leave to the judgment of the larger jury of my medical brothers." There can be no doubt on which side the judgment will fall. No one can read the little volume without being charmed with the admirable manner of its style, with the unaffected candor and integrity of its author, and with the high importance of the communication which he addresses to the medical profession.

Our author omits for obvious reasons an important element in the great successes which this method is constantly achieving. We will not use the pert phrase so much employed in these days—*personal magnetism*. Hope, expectancy, firm faith that the result must follow the means, are powerful adjuvants to massage and electricity. To the nervous invalid in the distant and obscure country village, the intelligence gradually diffuses, that a great master in the art of cure is to be seen. How the hope long deferred revives again when such a patient is afforded the opportunity to have his advice and treatment. The means used are so new in the experience of the patient, so striking in their results, the confidence of the physician and attendants so assured, that expectation rises to the highest point. Hardly more trust is felt by the sad pilgrim to our Lady of Lourdes; not more miraculous appear the cures wrought by Prince Hohenlohe. Although the method of cure so clearly taught must succeed anywhere if rightly employed, yet an important adjuvant is fortunately found in the confidence with which the patients may be inspired, in the willing obedience to the details of the treatment, and still more, in the mastery born of those qualities which make up the character of the really great physician.

R. B.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXIV.—*Saint Thomas's Hospital Reports*. New Series. Edited by Dr. BRISTOWE, Dr. JOHN HARLEY, and Mr. WAGSTAFFE. Vol. VII. 8vo. pp. xiv., 392. London: J. & A. Churchill, 1876.

SOME of the papers in this volume are purely surgical in character, while the remainder will be found to be of more general interest. In accordance with our custom, we shall notice these two classes separately, calling attention first to the latter class.

The first of this class is a paper *On the Etiology of Hydramnios*, by Dr. HENRY GERVIS, the Obstetric Physician to the hospital, who rightly holds that we shall never succeed in understanding the cause of the occasional excess of the liquor amnii until we have ascertained its source. The liquor amnii, he says, must be derived from the mother, from the fetus, or from both. That it is not wholly of embryonic origin is, he thinks, sufficiently shown by the fact pointed out by Schroeder, that in cases where the embryo has become atrophied, or has even entirely disappeared, the liquor has, nevertheless, been present, and in amount corresponding to the age of the ovum without reference to the embryo. Essentially, it is a limpid serous fluid, of slightly alkaline reaction, containing a trace of albumen and some saline constituents, and only with the progress of gestation does it contain urea, cast-off epidermic scales, and meconium. The author, therefore, holds that it cannot be derived originally from the fetus. If it be not of fetal origin, it must, of necessity, be derived from the mother, and among the maternal structures which can produce it, it is unnecessary, he says, to look further than the amnion. This is a serous membrane, and has every requisite for the secretion of a serous fluid; its lining epithelial cells being the immediate agents in the process.

Admitting that the liquor amnii is derived from the amnion, the cases in which it is found in excess may be brought under one of three heads. 1. The excess may be due to an inflammatory condition of the amnion. That this occasionally takes place is attested by observations of McClintock, Schroeder, Cazeaux, and others. 2. It may be due to disease and hypertrophy of the decidua, the amnion itself being healthy. In cases in which this occurs, either as a result of inflammation or as a sequence of constitutional syphilis, the circulation will be interfered with, and as a consequence an effusion of serum will take place. 3. It may be the result of some maternal blood dyscrasia, as for instance, that which is present in albuminuria.

Under the name of *Kakke*, Dr. W. ANDERSON, Professor of Medical Sciences in the Naval College, Yeddo, describes a disease which is very prevalent in Japan, and which very closely resembles the terrible affection known in India, Ceylon, and the south of Brazil as Beriberi. It may, he says, be defined as follows:—

“A recurrent non-febrile, non-contagious disease, endemic in certain low-lying towns of Japan, and especially associated with over-crowding, bad drainage, and bad ventilation; most prevalent during the period of high temperature and heavy rainfall, capable of remaining latent for very long periods, and of manifesting itself, under ordinary exciting causes, in places remote from its source. The symptoms are characterized by temporary numbness of certain portions of the

surface; paralytic affections of various muscles, most commonly those of the extremities; the loss of power, sometimes associated with spasm, muscular hyperæsthesia, and progressive atrophy; dropsical effusions, usually slight, and limited to the subcutaneous connective tissue of the lower extremities, sometimes extensive, and sometimes involving serous cavities, especially the pericardium; reflex vomiting in the most acute cases; abnormal excitability of cardiac motor centres, leading, in ordinary cases, to palpitation, in acute cases, to extremely rapid action of the heart, and consequent exhaustion of the organ, failure of circulation, and death."

Kakke, like beriberi, not only attacks a large proportion of the population in places where it prevails, but it is also a very fatal affection. Thus in the military stations in the south of Japan, the whole number reported sick from this cause forms no less than 23 per cent. of the total force of 15,000, while the mortality from it, even under the most favourable circumstances, is about 22 per cent. and in some localities has reached 30 per cent. of the cases. Although Kakke often runs an extremely rapid course, death is not so apt to occur suddenly from it as is said by Dr. Aitken to be the case in beriberi. The latter is also said by this author to occur in the damp cold season in India, while Dr. Anderson asserts that the former is most frequent in the rainy, warm, season of Japan.

In the few post-mortem examinations which have been made, no abnormalities beyond dropsical effusions have been detected, but in no case, the author tells us, have the nervous centres been fully investigated. He thinks that the cause of the motor paralysis of the extremities, and of the spasms, must be looked for in the anterior columns of the cord, while a localized and usually transient affection of the posterior cornua would account for the numbness so constant at the beginning of the disease. The muscular hyperæsthesia is less easy to explain, as it may originate either in the cord or in the affected muscles themselves.

The treatment of the disease appears to be very unsatisfactory. Quinia, arsenic, carbolic acid, the sulphites, and the hypochlorites have all been tried, but only with negative results. Strychnia has been found useful as a remedy for the motor paralysis, but should not be given when this symptom is accompanied by muscular hyperæsthesia and severe spasm, which are said to yield to aconite given in somewhat large doses. The circulatory disturbance is often relieved by digitalis and by hypodermic injections of morphia, although the effect of the latter passes off generally in the course of a few hours.

In the first part of his paper entitled *Notes on Cases of Nervous Disorder*, Mr. W. M. ORD refers to the part played by reflex irritation in producing certain morbid conditions of the skin. Among the cases which he reports is one of herpes zoster, which occurred in a man fifty years of age, who had partially recovered the use of his limbs after an attack of apoplexy. The eruption occurred upon the paralyzed side, and while not very extensive, was accompanied by a good deal of pain. It gave rise to ulceration which left a scar as deep as that which follows a burn, and which was acutely hyperæsthetic two years after. The author says that in those advanced in life the pain is often much more severe than in the young, although the eruption is frequently slight. He refers also to several other cases in which there was good reason to believe that irritation of the genito-urinary tract was the cause of an eczematous eruption, and alludes to the well-known fact that chronic eczema frequently alternates with bronchial catarrh.

The latter part of Mr. Ord's paper is on some reflex influence exerted by the skin in internal organs. In it he reports a case of capillary bronchitis and one of enteric fever accompanied by a good deal of diarrhœa, in which the cold bath was used with great advantage, not merely in reducing the temperature, but also in relieving the bronchial inflammation in one case, and the intestinal complication in the other. In a case of curvature of the spine in which paralysis of the lower

extremities had supervened, and in which the usual remedies had failed, it occurred to Mr. Ord that the central nervous system might be roused from its dormant state through the agency of extensive stimulation of the skin. With this end in view, the patient was ordered to be placed in a bath at 100° Fahr. for twenty minutes daily. The treatment proved eminently successful, for, after the fourth bath he was able to move his toes, and in a fortnight, he could raise his legs from the bed, and at the end of about six months, "was able to stand, though not to walk without the support of a stick." A modification of the same treatment, douches of hot water to the lumbar and dorsal region of the spine, was also attended with very good results in a case of infantile paralysis. In fact, the improvement was so remarkable that we shall quote Mr. Ord's own words in speaking of it. "At the end of a fortnight," he says, "the hyperaesthesia had nearly disappeared, except from the soles of the feet: the child, lying on his back, could now kick his heels in the air. At the end of a month he began to crawl, at seven weeks he stood, and on the 1st of September (less than three months after the institution of the treatment), he walked into my room without any remaining sign of over-sensibility." It should be mentioned, however, that the child was taking, at the same time, hypophosphite of soda with cod-liver oil.

Dr. ALBERT J. BERNAYS continues in the present volume his report *On the Working of the Adulteration Act*, calling attention particularly to the varying quantity of alcohol contained in fermented liquors. Thus, he says a glass of gin in one place contains 50 per cent. of proof spirit, in another 76 per cent. Even beer, the national drink of the Britons, is found to vary in a most extraordinary manner with regard to the amount of proof spirit it contains. It is not uncommon to meet with porters, the author tells us, varying from 5.32 per cent. to 12.76. Milk still continues to be largely adulterated with water, and it would appear to be sufficient for the seller to admit the fact to withdraw him from under the operation of the Adulteration Act. The same is true of other articles which are openly sold as mixtures, thus a packet of so-called cocoa, coffee, or mustard has only to be labelled as a mixture, and there is then no further protection to the public as to whether cocoa, coffee, or mustard be or be not the leading constituent.

It will not be necessary to notice Dr. THOMAS B. PEACOCK's two papers on *Intracranial Aneurisms*, as this subject has recently been very fully discussed in the pages of this Journal (see number for April, 1872), by Dr. Roberts Bartholow, of Cincinnati. In one of the three cases which are reported in this paper, the aneurism was seated in the right internal carotid artery immediately before it gave off the middle cerebral artery. In the other two cases, the right and left middle cerebral arteries were the vessels affected. Dr. Peacock has collected and tabulated upwards of eighty-six cases, reported since the publication of Sir William Gull's paper in the Gny's Hospital Reports in 1859. These he subjects to an analysis. These papers, which form a valuable addition to our knowledge of intracranial aneurisms, are illustrated by two lithographic plates.

Dr. F. CHARLEWOOD TURNER in his article *On the Presystolic Bruit* calls attention to the fact, which was, we believe, originally pointed out by Prof. Flint in the 44th volume of this Journal, that this murmur is sometimes heard in cases in which there is no mitral stenosis, and rejects the explanation which Prof. Gairdner has proposed for it. He expresses the opinion that the murmur does not really precede the systole of the ventricles, as is at present generally taught, and is, therefore, not strictly a presystolic murmur. It is synchronous, he thinks, with the beginning of this process, in this view agreeing with Dr. A. C. Barclay, whose series of papers on this subject in the *Lancet* for 1872 are doubtless familiar to many of our readers. Both Dr. Turner and Dr. Barclay believe the first sound of the heart to be due to the tension of the auriculo-ventricular valves, but this

does not take place until after the beginning of the ventricular systole. There is, therefore, an appreciable interval between the commencement of the systole and the time when the first sound is heard—an interval in which they hold that a slight regurgitation through the mitral orifice may take place. Dr. Turner, indeed, holds that there is even in health a slight tendency to regurgitation at this time, which is, of course, very much increased in disease. But we shall let him speak for himself.

“If there should be,” he says, “a slight thickening, causing some loss of sensitiveness in the mitral curtains, or perhaps if there should merely be a sluggishness in the ventricular contraction, there would result an increase of this presystolic regurgitation, and a corresponding increase of the vibratory element of the first sound would be heard as a slight prolongation and roughening of it. Where, as in an advanced case of mitral stenosis, the mitral curtains are obviously thickened and stiff: it can scarcely be imagined that their closure would be effected without considerable reflux, sufficient to produce a well-marked ‘presystolic’ bruit. A delay of the closure of the valve thus caused would, at the same time, result in a more forcible collision of the curtains, which may account for the loudness and sharpness of the first sound following this bruit. If the mitral curtains should become more contracted, so as to be no longer capable of being brought into exact apposition, the harsh, rough ‘presystolic’ bruit would be followed by a softer blowing murmur of continued regurgitation.”

The paper contains the reports of several cases which the author adduces as arguments in favour of the position he takes, and is illustrated by some sphygmographic tracings, which he believes sustain the same view.

In the beginning of his paper *On the Mutual Relations of the Birth-rate and Death-rate*, Dr. J. S. BRISTOWE refers to a criticism which was made by a correspondent of the *London Times* of Dr. Richardson’s assertion that in his visionary city “Hygeiopolis” the annual death-rate would be reduced to five per cent., the correspondent maintaining with some show of argument that a mortality of five per cent. implied an average duration of life of two hundred years. Dr. Bristowe, however, shows that this is only true in a population which neither diminishes nor increases, and in which the removals by death are exactly balanced by the additions by birth. He, therefore, insists upon the importance in estimating the death-rate of taking the birth-rate into account.

Dr. BRISTOWE also contributes a second paper, entitled *Note in Reference to the Welsh LL and certain other Surd or Aspirate Consonants*, which is rather difficult to analyze. We fancy, moreover, that it will possess little interest for the majority of our readers.

The volume also contains a *Continuation of the Medical History of the Clergy Mutual Assurance Society*. From it we learn that during the forty-five years that have elapsed since the foundation of the Society, 1135 deaths have occurred among the insured, of which 1023 were of clergymen, 55 of laymen, and 57 of females. It would also appear that clergymen have as good a chance of long life as any other body of men. Thus the insured clergymen came in at the average age of 40, and died at the average age of 57.8, living for an average period of 17.8 years. The laymen seem to have entered at a somewhat earlier age, viz., 36.6, and to have died considerably sooner, viz., at 49.9, giving an average duration for their insurance of 13.3 years. The females entering at an average of 44.8, died at an average of 57.1, giving only a duration of 12.3 years. This corroborates the general impression that female lives have not paid so well as males.

From the *Report of the Obstetrical Department* we learn that during the year 1875, 1438 women were attended, 22 of the births were of twins, 7 women aborted, and 6 children were still-born. Placenta prævia occurred 8 times, and breech

presentation 18 times; five of the children being born dead. Two maternal deaths are recorded. A case of pemphigus following delivery is reported.

The *Medical Report*, as usual, contains several tables showing the character and number of the cases treated in the medical wards during the year.

Appended to the volume is a short sketch of the life and services of Richard Gullett Whitfield, who held the office of apothecary to the Hospital for upwards of forty-five years.

J. H. H.

The first surgical paper we shall notice is one *On Cleft Palate*, by FRANCIS MASON, F.R.C.S. Mr. Mason first gives a cursory but interesting historical *resumé* of the varieties and anatomy of these cases, together with an account of the preliminary attempts at cure which have led up to the advanced operations undertaken at the present time for the relief of this deformity. Throughout the introductory portion of the paper illustrative cases are cited from time to time, which give interest to a somewhat well-worn subject.

The operations are divided, in accordance with the kind of deformity for remedying which they have been devised, into staphylorraphy, where the soft palate alone is involved, and uraniscoplasty (sic), and osteoplasty or those instances where the deficiency exists in the hard palate. The term uraniscoplasty has one more syllable than our old friend uranoplasty, which addition certainly does not add to the euphony of the word. Indeed these Greek terms so commonly attendant upon new surgical measures are, to our mind, of questionable utility, not having the recommendation of antiquity; for they have not come down to us from the ancients, but are of modern coinage, and are merely clothed in the garb and language of the past for the convenience of foreign readers. That the foreign reader may sometimes be helped to an understanding of the subject by such sesquipedalian terms, there can be little doubt, yet the very weight of such terms is a hindrance, and is commonly found to prevent their daily use among English-speaking surgeons.

Mr. Mason has had some success with the use of escharotics, and regards the treatment of cleft palate by touching the edges of the fissure with them, while somewhat tedious, yet as fairly satisfactory. Mr. Mason very properly urges the importance of patients being in the best possible general health before an operation is undertaken, and thinks that preliminary purging, by reducing the strength, impairs the prospect of success. His preference is for chloroform, as an anæsthetic, for the reason that ether excites the secretions, and he advises the use of a gag, and as simple apparatus as possible. It is hardly worth while to enter here into the oft-repeated discussion of the merits of ether and chloroform, yet we must record a protest against this recommendation of a *less safe*, though more convenient agent, over one *more safe*, but less convenient. Few patients, we take it, would knowingly incur even the small percentage of risk attending the administration of chloroform, if they were aware of the now demonstrated fact, that the risk from the use of ether is much less. Contrary to the advice of Sir William Fergusson, Mr. Mason's experience induces him to leave the sutures to work their way out unless there is manifest irritation set up by their presence. While endorsing the plan of dividing the falcial muscles to secure rest of the stretched velum, Mr. Mason thinks that the division should be the last step in the procedure rather than the first, as was suggested by Fergusson.

Passing on to a consideration of the operation for closure of the hard palate, Mr. Mason recommends that in those cases in which hare-lip is added to deficiency of the palate an operation upon the lip should be done without any delay, as by this means the palatal fissure is often induced to contract very considerably. In performing this operation, uraniscoplasty, Mr. Mason follows the method of

Langenbeck in detaching the mucous membrane and periosteum from without inwards, thinking that by this means a thicker and stronger flap can be obtained than by dissecting from the median line towards the periphery.

Osteoplasty does not receive very hearty commendation from our author, although he occasionally practises it; for, no matter how carefully performed, his experience leads him to look upon some subsequent exfoliation of bone as unavoidable.

This article, like the one contributed by Mr. Mason to the last volume of these reports, is rather suited for the tyro in surgical science than the experienced practitioner of the art, being such an epitome of its subject matter as would find its more appropriate position in the guise of an introductory lecture to a class of students, as it is somewhat too meagre in cases and experimental details to be properly included in the reports of the practice from a great general hospital.

MR. SAMUEL OSBORN, F.R.C.S., furnishes the next surgical article, and discourses *On the different Forms of Hydrocele of the Tunica Vaginalis*, and treats his readers to an abstract of leading surgical opinions concerning this disease. He lays stress upon the distinction existing between visceral and parietal hydrocele, regarding the former as a local attendant upon disease of the testicle, or epididymis, and requiring treatment directed to the original cause, while the latter is looked upon as a local dropsy. Mr. Osborn emphatically condemns the tapping of a visceral hydrocele, maintaining that the affection of the testicle should first and chiefly receive attention. The distinction is a very nice one, and without doubt lies at the foundation of those instances, by no means rare, where an operation is not speedily and at once successful; yet we question the propriety of casting doubt upon its efficacy even in these cases, as quite often the abnormal condition of the testicle is first made apparent upon the withdrawal of the surrounding fluid, and the necessity for other treatment is in this way made known; nor are we able to conceive of a case in which the removal of the fluid can exercise other than a favourable influence upon the testicle itself. Mr. Osborn's experience leads him to agree with Gerdy and Velpeau that idiopathic hydrocele occurs with greater frequency upon the left side, although in this conclusion he differs from so high an authority as Mr. Curling. One valuable statistical table is furnished by Mr. Osborn. Out of fifty-four cases where the injection of iodine was resorted to in St. Thomas's Hospital, the same measure had previously failed in nineteen. Out of twenty-five cases operated upon by this method whose after history was obtained, a recurrence of the affection took place in no less than eighteen, and in two of this latter number the iodine treatment had failed previously. It will thus be seen that while a pretty large proportion failed to respond successfully to the first injection, but a small number were unimproved by a second operation. These results coincide pretty closely with the experience of the writer of this notice. It is quite customary to speak of and treat a hydrocele as a trivial matter, and such it very often is, but notable exceptions occur which may cause both patient and surgeon no little anxiety. There is often a disagreeable element of uncertainty even in tapping a hydrocele, from the fact of the walls of the sac being too thick to allow of the application of that diagnostic experimentum crucis the transmission of rays of light, and there is always great uncertainty as to the amount of inflammation we may induce by our operative measures; for on the one hand it may be too slight to accomplish the result we aim at, while on the other it may very easily become excessive, and we may find ourselves with a troublesome orchitis to treat. Mr. Osborn's article is by no means exhaustive, and the same criticism will lie against it as against that of Mr. Mason, namely, that it lacks entirely that element of recorded results of practice which are naturally looked for in hospital reports.

Anatomical Variations. H., by W. W. WAGSTAFFE, F.R.C.S., Assistant-Surgeon and Lecturer on Anatomy, and ROBERT W. REID, M.D., M.C., Demonstrator of Anatomy, relates certain anomalies observed in the dissecting rooms of the Hospital during the winter of 1876 and 1877. The first and most interesting case was of "a large bony growth projecting from the middle of the front of the humerus, and attached by ligament to the front of the coronoid process of the ulna," which divided the brachialis anticus into two planes, and by impaction against the soft parts of the forearm in flexion must have interfered with the usefulness of the upper extremity during life. Muscular abnormalities noticed were a double omo-hyoid—varieties of the stylo-hyoid, which from their attachments might be appropriately called stylo-chondro-hyoides, and stylo-hyopharyngeus. The rare extensor pollicis et indicis was observed twice, and a tibio-accessorius once.

Three Cases of Imperforate Rectum recorded by H. H. CLUTTON, F.R.C.S., Resident Assistant Surgeon, form the subject of the next surgical article. The first case was of an infant two days old, in whom, though there was a well-formed anus, there was no connection with the gut. A slight but firm cord could be felt leading up to a tumour situated so far forward in the pelvis that much doubt was entertained whether it was the bladder or rectum. This doubt having been cleared up by finding that the free flow of urine through a catheter did not affect the bulk of the tumour, a trocar was thrust into it, and the appearance of meconium at once demonstrated the fact that the rectum had been reached. Complete relief followed the operation. The after-treatment consisted in dilating the puncture, without any attempt being made to bring down the mucous membrane. After three weeks the orifice was found to have contracted, and dilatation with incisions of the stricture were resorted to. Six months later it was found necessary to again incise the parts, after which a good recovery ensued. Mr. Clutton thinks that had the mucous membrane been brought down and attached to that on the verge of the anus the after-trouble would have been averted.

In the second case, also in the person of a child two days old, no tumour could be detected, and a careful dissection was carried on along the anterior surface of the sacrum. Meconium appeared at a depth of two and a half inches from the margin of the anus, but it was impossible to bring the bowel down, as it seemed firmly attached to the sacrum, and was situated at so great a depth. The patient, although healthy and well nourished, succumbed to convulsions three days after the operation. Mr. Clutton refers to a case by Mr. Le Gros Clark, cited in "Curling on Diseases of the Rectum," where a permanently good result ensued in a case where, on account of the great depth of the parts, it was impossible to bring down the gut, and questions the propriety of the extended incisions required to accomplish this end in such cases.

In Mr. Clutton's third case, in a child four days old, the dissection was carried to the promontory of the sacrum, and, as no bowel was found, the next day Littré's operation in the left inguinal region was performed. This step afforded complete relief at first, but after some days, the child, without any symptoms of peritonitis, began to waste, and, eighteen days after the operation, died in a condition of great emaciation. Upon post-mortem examination, the rectum was found one inch and a half from the anus, unattached to the sacrum, having been missed in the first operation. That this error should have occurred is thought by the writer of the paper to have been owing to the fact that the bowel contained no meconium at the time of the exploration, and he thinks that had the wound been explored again before resorting to colotomy, the rectum might have become by that time sufficiently distended to be recognized. It was intended to have passed a probe down from the opening in the groin, and to have cut down upon its ex-

tremity from the anus, but the decline and death of the child precluded the adoption of this measure. This paper, as a faithful and honest record of experience, is of much value, and is such a one as is naturally, yet too often vainly, looked for in a volume of hospital reports.

A brief *Report of St. Thomas's Hospital Medical and Physical Society* forms the next paper. Condensed accounts of the proceedings of ten meetings in the session of 1875-76 are given, which, while doubtless possessing interest and affording instruction to the members of the society, contain nothing which can be made of value to the general profession by a notice at our hands. The various subjects discussed were diet; consanguineous marriages; digestion in plants; diarrhoea; antiseptic surgery; treatment of inflammation; life, and the phrenological system, each of which is dismissed in a very few words.

Mr. WILLIAM MAC CORMAC contributes the next article, consisting of interesting and well-told *Notes of a Case of Removal of the Scapula*. The case occurred in the person of a young woman, twenty-nine years old, who, sixteen years before, felt pain in the shoulder, but perceived no growth until within seven years. At that time, 1869, a hump the size of a walnut was discovered, which continued to grow painlessly to the size of a large orange at Christmas, 1875. From that time the tumour grew rapidly, and great pain was experienced. "On admission, a rounded tumour, quite as big as a boy's head, was found to involve the whole scapula, except the tips of the acromion, and coracoid processes. It bulged up into the neck beneath the trapezius, lay over the subclavian vessels, and filled the posterior half of the axilla, having clearly invaded the subscapular fossa." The skin was tensely stretched over the growth, adherent in some places, and changed in colour. The tumour measured twelve inches from its upper to its lower border, was circumscribed and freely movable upon the thorax, and from the distinct fluctuation was evidently cystic in some parts. On May 10, 1876, Mr. Mac Cormac removed the scapula and attached growth. The clavicle was first sawed across close to its acromial end, through a horizontal incision made over it, from the acromion towards the spine, and by which also free access could be obtained to the subclavian vessels, should the hemorrhage become excessive. Vertical incisions were then made, and the mass dissected from below upwards. During this dissection, the subscapular artery was felt in the flap, and grasped by an assistant before division, and bulldog forceps were applied to each vessel as cut. By these precautions, but little blood was lost, and the patient made a good recovery under antiseptic treatment of the wound. Unhappily the disease recurred some months later in the neighbourhood of the clavicle, and in the lungs, and the patient speedily succumbed to its advance. The original tumour and the recurrent growth were found to closely resemble each other, presenting the characteristic appearances of a myxoma, with here and there some of the large nucleated cells peculiar to cartilaginous tissue, and it is, therefore, judged by the author of the paper to be rightly styled a myxo-chondroma. Mr. Mac Cormac draws attention to the fact of the long and painless duration of the disease until a short time before the operation, when he thinks the increased activity and pain were coincident to the addition of the myxomatous element upon the original long-existing enchondroma. The transformation of a benign into a malignant growth is frequently, in our experience, accompanied by the symptoms to which Mr. Mac Cormac alludes, and it is to relieve the pain, then, for the first time, severe, that resort to so severe an operation becomes justifiable. Particular attention is called to the preliminary division of the clavicle as a step by which the subsequent proceedings were very materially facilitated. The paper is a notable one among its fellows in the volume before us, and it is a noteworthy fact that its author presents himself without title added to his name.

The *Surgical Report*, 1875, by SAMUEL OSBORN, F.R.C.S., Surgical Registrar, is a valuable analysis of the work done in the surgical wards of this time-honoured hospital, but is too condensed to admit of the compression required by the limits of this notice. By it we learn that there are two hundred and twenty surgical beds in St. Thomas's Hospital, of which from one hundred and eighty to one hundred and ninety are constantly occupied by fifteen hundred and ninety patients, whose average stay in hospital was thirty-five days, and whose mortality was 10.4 per centum. Three tables are given. No I. presenting an abstract of cases according to the authorized nomenclature, with an analytical summary, and a sub-table giving the number of cases of erysipelas occurring. Table No. II. records the cases of pyæmia, and No. III. the operations performed.

In noticing the surgical articles of this volume we have been impressed with the fact that they constitute but a small portion of it, either in size or importance. But a moiety of the surgical staff are among its contributors, and in the papers contributed there is not much evidence of painstaking labour. The material furnished by fifteen hundred and ninety surgical cases, has been apparently devoid of interest, as but few of them figure upon the pages which profess to record the surgical experience of this great and wealthy hospital. Even in those instances where a subject has been taken and written upon, there is no manifestation of that thorough experimental study which can alone make monographs valuable, but the matters are treated of very much in the style of graduation theses, so that the question is forced upon the reader, Is it worth while to continue the publication of an annual volume which must contain so much padding, and which from the want of interest on the part of the surgical staff, or for some other reason, is lacking in great measure of interest to the general surgical reader? Would it not be better to make the volume a biennial one, than to keep up its size and frequency, without reference to the scarcity of material suited for its pages? S. A.

ART. XXV.—*Medico-Chirurgical Transactions*. Published by the Royal Medical and Chirurgical Society of London. Second series. Volume xli. 8vo. pp. lxi., 430. London: Longmans, Green, Reader & Dyer, 1876.

WE shall call attention at the present time only to those papers in this volume which have not already been laid before our readers, either in previous numbers of this Journal, or in its adjunct, *The Monthly Abstract of Medical Science*.

The first of these is a *Note on Pathological Absorption Spectra*, by Dr. EDWARD LAWTON MOSS, in the course of which he takes occasion to say that the spectroscopie yields the earliest evidence of the hæmaturia of Bright's disease. In a case of that affection, recently under his observation, the Sorby blood bands in the urine preceded any definite identification of albuminuria by the ordinary tests, though the daily quantity of urine was already increased. In a case of cirrhosis of the liver, the urine exhibited, in addition to the ordinary urinary absorption, diffused more or less equally over the whole blue end of the spectrum, a well-defined and intense band, lying between 1700 and 2100 of Kirchhoff's scale. After several experiments, the author found a similar band in a solution of normal acid feces. It was, however, altogether absent in healthy alkaline feces. This band in the spectrum of urine and feces disappeared on neutralization with ammonia, but reappeared on reacidulation.

Mr. HENRY TRENTHAM BUTLIN contributes a paper giving the result of his examinations of *The Minute Anatomy of Two Breasts, the Areolæ of which had*

been the Seat of Long-standing Eczema, which were undertaken with the view of determining whether or not the connection, which Sir James Paget (see number of this Journal for October, 1875), believes to exist between long-continued eczema of the nipple and carcinoma, is real or only apparent. In addition to the changes in the mucous layer of the epidermis, and in the corium, which are usually found in eczema, the microscope showed that the galactophorous ducts were widely open or distended. They were not lined as in the normal condition by cylindrical epithelium, but contained frequently large masses of epithelium of the squamous or glandular form. In the immediate vicinity of the ducts the connective tissue was discovered frequently infiltrated with small round cells. An induration which existed in one of the breasts, and which to the naked eye presented much the same appearance as certain forms of cancerous infiltration, was also examined. Its acini were found to be much larger than normal, and to be filled with epithelium. They were also more widely separated than is the case in health. These conditions resemble very closely those the author has several times found in the immediate outskirts of carcinoma of the breasts, and are described by Waldeyer in his articles on the development of carcinoma.

In conclusion, Mr. Butlin says, "There being no cancer in these breasts it is impossible to say that cancer would have formed in either. The facts before us, however, are not without importance, since they show that considerable changes are capable of being induced in the very substance of a more or less deeply-seated organ, apparently by the presence of a very slight area of disease on the surface."

From the *Notes on the Bouton de Biskra*, which are communicated by Dr. H. VANDYKE CARTER through Dr. J. Burdon Sanderson, we learn that this disease commences as a superficial papule or pimple, which, in the course of some days, becomes a nodule or "bouton," and, then acquiring a scab, often ends as a very indolent ulcer; that the ordinary duration of the eruption is five or six months, or from November to April; and that the spots may be numerous, secondary ones appearing round the first, or at a distance. Very little local pain or redness attends the "bouton," and, as a rule, there is no constitutional disturbance whatever. General treatment has not been found to influence the course of this affection; and, locally, caustic applications are alone of any use.

The microscope showed that the *clou de Biskra* is essentially a granulation tumour, *i. e.*, a tumefaction caused in chief part by the advent of pale round cells, which becoming densely crowded in the cutis, produce expansion of the connective-tissue meshes, effacement of the papillæ, and the disappearance of the adjoining softer epidermis. But permeating this cellular infiltration, and especially frequent at its outskirts, were seen numerous bulging and branching channels, which were usually filled with filamentous or myceloid structures. On transverse section, round spaces appeared similarly occupied, and it became evident that the lymphatic vessels of the parts implicated were the seat of a foreign growth, which must be regarded as strictly parasitic in its characters. Dr. Carter thinks there can be no reasonable doubt that this parasitic growth is the essential cause of the "bouton" de Biskra, believing that the presence in the tissues of a foreign growth would be a sufficient reason for all the signs of irritation which are seen in the tumour of the skin. A further proof of the parasitic nature of the affection is to be found in the fact that Dr. E. Weber, Médecin-Majéur, 3me. Batn. d'Afrique, has succeeded in showing that it is inoculable.

In view of the fact that the bouton de Biskra is caused by a lowly organized parasitic growth, Dr. Carter proposes to call it *Mycosis cutis*, adding the word *chronica* to indicate a distinction from the similar acute disease.

Surgeon-Major J. H. PORTER reports a case of *Intermittent Hemorrhage from Malarial Influence*, the subject of which was a young man whose left leg had been

amputated at the knee-joint for what would appear to be strumous disease, although the author speaks of it as rheumatism. At first the patient did well, but at the end of a few days the favourable progress was broken by a succession of hemorrhages, occurring at irregular intervals, and extending over several days. No treatment was of the slightest avail in preventing the loss of blood, until Surgeon Porter remembered that his illness had begun with a severe attack of intermittent fever, and put him on anteperiodic doses of quinia, when it was at once arrested.

Dr. WILLIAM ROBERTS, of Manchester, is the author of a paper *On the Estimation of Albumen in Urine by a New Method, Adapted for Clinical Purposes*, which consists essentially in progressively diluting the urine, and testing it from time to time with nitric acid, until the opacity induced by the acid becoming gradually fainter and fainter, at length ceased to be visible. This point is reached when the diluted urine contains less than about 0.0014 per cent. of albumen. As it is impossible to fix the vanishing point of the reaction with accuracy, Dr. Roberts drew the line at a reaction coming into sight midway between half and three-quarters of a minute after the addition of the acid: that is, he diluted the urine until it gave no reaction for thirty seconds after the contact of the acid, but showed a distinct opalescence at the forty-fifth second. Each dilution with a volume of water equivalent to the unit volume of urine employed was counted as one degree on the scale: and these degrees might be conveniently termed "degrees of albumen." Thus a urine which required forty volumes of water to reach the zero reaction, might be described as possessing 40 degrees of albumen, etc. When the zero reaction is determined, the degree of dilution required to produce it was noted and expressed in multiples of the unit volume of urine employed. Thus, if 5 c. c. of urine gave the zero reaction when diluted up to 400, *i. e.*, at the eightieth dilution ($400 = 80$), the urine was registered as possessing 80 degrees of albumen. The author found, by first ascertaining the degrees of albumen by the dilution method, and then estimating the quantity of albumen by the weighing process, that each degree on the dilution scale corresponded to 0.0034 per cent. of albumen. The proportion of albumen in a urine was, therefore, obtained by multiplying the degrees of albumen by the co-efficient 0.0034. For example, a urine which possessed 250 degrees of albumen contained 0.85 per cent. of albumen ($250 \times 0.0034 = 0.85$). From these data it is easy to calculate the daily loss of albumen by the urine. Suppose 1200 c. c. of urine to be voided in the twenty-four hours, and that a sample of this urine showed 250 degrees of albumen, *i. e.*, 0.85 per cent., then $1200 \times 0.85 = 10.2$: the daily loss of albumen would, therefore, be 10.2 grammes.¹

The author says, in conclusion, that the dilution method compares favourably with the weighing process, even in urines selected for their suitability to the latter process, but it excels it in the diminished time and trouble required for its performance, and also in its more general applicability to all grades of albuminous urines.

Dr. J. WICKHAM LEGG contributes a paper embodying the results of his examinations in ten cases as to the amounts of *Urea and Chlorides in the Urine of Jaundice*, in which he shows that these bodies are not so much diminished as from theoretical considerations we might suppose they would be. It is also noteworthy that in the case in which the excretion of urea was the highest, the obstruction

¹ In the measures more usually used in this country the calculation is made as follows: Suppose, as above, that the urine contained 0.85 per cent. of albumen, and that the quantity voided in twenty-four hours was forty fluidounces. Each fluidounce contains 437.5 grains, the $\frac{437.5}{100} \times 0.85 \times 40 = 148.75$, the daily loss of albumen would, therefore, be 148.75 grains.

to the bile-ducts was likewise found after death to be complete, and in the second highest case, in which, however, no examination after death was made, the jaundice had been deep for several years, and the stools had been colourless throughout that time.

The tumours which furnished the material for Dr. WM. R. GOWERS's paper *On the Development of Spindle Cells in Nested Sarcomas* were all good examples of this particular kind of growth. The paper is illustrated by a plate showing the development of spindle cells by what Dr. Creighton calls vacuolation. The relation of this process of cell-development to the formation of concentric nests can also be traced in some of the drawings given in the plate. The author says that this process of vacuolation plays a very important part in the transformation of the tissue elements of many morbid growths.

Dr. R. DOUGLAS POWELL contributes a valuable paper *On Some Effects of Lung Elasticity in Health and Disease*. After referring to Mr. Hutchinson's and Dr. Hyde Salter's views on the physiology of respiration, the author points out the fact that in the normal position of thoracic repose the contractility of the lungs is exactly counterpoised by the elastic resilience of the chest walls. In other words, at the close of expiration, the thoracic parietes are drawn inwards further than their own resilience would carry them by the elastic recoil of the lungs. It is obvious, therefore, he says, that the elasticity of the chest wall is a force, not only in favour of inspiration at the commencement, but against expiration at the termination of the respiratory act. It renders easier the expansion of the chest, by neutralizing the first resistance and inertia of the lungs, and in the final contraction of the chest in expiration exercises a buffer-like action in taking off the shock of recoil. This elastic help at the beginning and elastic hindrance at the end of the respiratory act is a spring-like function of the chest wall, to estimate the importance of which it is only necessary to glance at the emphysematous chest, when the uneasiness entailed by its loss will at once be seen. The lungs in emphysema have not lost all their elasticity, but they have lost so much of it that the eccentric thoracic and diaphragmatic resilience has nothing to oppose it, the chest boundaries are no longer, therefore, drawn inwards by the lungs in expiration beyond the position they would assume of their own accord. The author, therefore, cannot adopt the generally received opinion that the chest is expanded in emphysema in consequence of the pressure of the lungs, believing that it is simply due to the diminished power of these organs, on account of the loss of their elasticity, to oppose successfully the resilience of the thoracic parietes.

Just as the elastic tension of the lung draws upon the thoracic wall, and has, as its counterpoise, the resilience of the ribs and cartilages, so, in the median line, the elastic lung on one side draws upon the mediastinum, and has, as its counterpoise, an equal traction of the opposite lung. If, therefore, from any cause, the elasticity of one lung be impaired, the mediastinum, and, of course, the heart with it, will be drawn to the opposite side. Now in some cases of pneumothorax which have come under Dr. Powell's observation, the communication with the bronchus was free and patent, allowing the air to pass to and fro through the lung with inspiration and expiration. Under these circumstances no intra-pleural pressure can exist, and yet the heart was displaced. He contends, therefore, that the primary cause of displacement of the heart in pneumothorax is not air-pressure acting from the diseased side, but lung-pressure acting from the healthy side. The mechanism of displacement of the heart in cases of fluid effusion into the pleura, he believes to be essentially the same. "Cardiac dislocation occurs," he says, "in plenisy *pari passu* with the effusion; whereas, if its occurrence were a matter of pressure, it should not take place so long as the fluid no more than occupied the space left by the contracted lung." He adds, however, that in cases

of considerable fluid effusion into the pleura, there is, of course, always pressure upon the heart.

Dr. GEORGE THUN contributes a paper *On Some of the Changes found in Cancer of the Skin or Epithelioma*, with special reference to the source of the newly formed epithelial cells, which will be found to be of great interest to microscopists. The preparations which are more particularly described were obtained from a case of epithelioma of the lip of a woman, which was caused by smoking a very short and dirty black pipe. The disease, according to the author, who has operated in seven cases, is not rare in some who smoke, but it apparently does not occur in others. As the paper is a very long one we will give a portion of the general conclusion with which it ends.

"In this disease," he says, "there is an abnormal growth of epithelium and a morbid condition of the fibrillary tissue of the cutis." In addition to this there is a development of lymph-corpuscles into epithelium, when brought into contact with the epithelial cells already existing, which is a process that also takes place in health, and cannot, therefore, be considered as in itself peculiar to cancer, although the enormous extent to which the process develops is characteristic of the disease. This is shown, not only by the increased development which takes place in the immediate neighbourhood of the epithelium, but by changes in lymph cells at a considerable distance from it, which are of a more or less marked epithelial character. "I have thus arrived," to quote his own words, "at results similar to those obtained by Classen in the cancerous cornea, and as regards the growth of epithelium from colourless blood-cells in physiological conditions, I am in accord with the views expressed thirty years ago by Addison, and more recently by Biesiadecki and Pagenstecher."

Dr. WILLIAM R. GOWERS's paper *On Athetosis and Post-Hemiplegic Disorders of Movement* will be found worthy of careful study, especially by the student of nervous diseases. Under the name of "Athetosis," it will be remembered (see number of this Journal for January, 1874), Dr. Hammond first described, in his *Treatise on Diseases of the Nervous System*, a peculiar affection "mainly characterized by an inability to retain the fingers and toes in any position, in which they may be placed, by their continual movement." These movements never occur in limbs the seat of an absolute paralysis, and in the cases which came under Dr. Hammond's observation had not been preceded by it. He hence not unnaturally inferred that they are entirely distinct from those occasionally seen after hemiplegia in early life, and more rarely after hemiplegia in adult life, giving us as a means of distinguishing them, that in the former the disordered movements continue during sleep, while in the latter they occur only on voluntary movement. Much weight, however, cannot be attached to this distinction, for Dr. Hammond has recently claimed as instances of athetosis cases in which the movements ceased during sleep, and the author reports in this paper a case, in every other respect typical, in which the irregular movements occurred in limbs previously paralyzed. In this case the symptoms, which unquestionably depended upon syphilitic disease of the brain, almost entirely disappeared under treatment with the constant galvanic current, after the use of the iodide of potassium and other remedies had failed to effect any improvement. Dr. Gowers further points out that, in each of Dr. Hammond's cases, the motor disturbances had been preceded by sudden cerebral symptoms, and in some was accompanied by hemiplegic numbness. "There is thus evidence," he says, "that the pathological change causing the disordered movements was in some cases secondary to a sudden lesion. Whether such lesion led to motor loss of power would be very much a question of position and extent."

All the symptoms in post-hemiplegic disorder of movement point to a lesion.

Dr. Gowers thinks, which damages more extensively than it destroys the brain tissue, and hence to softening rather than to hemorrhage. It seems essential, too, that the gray matter affected shall be in some connection, direct or indirect, with the volitional centre, as in no instance of post-hemiplegic spasmodic movements was there an absence of voluntary power. There have not been many post-mortem examinations in these cases, but the author says that there can be little doubt that the seat of the lesion is in the corpus striatum and optic thalamus, while there is reason to believe that some regular alternating movement may be due to disease of the gray matter in the pons Varolii. It will be seen, therefore, that he does not agree with those writers who ascribe these disorders of movement, following hemiplegia, to secondary spinal changes.

Dr. Gowers reports eighteen cases of post-hemiplegic disorders of movement, and the conclusions he draws from them are therefore valuable; but, inasmuch as most of his observations in regard to this condition have been anticipated by Dr. Weir Mitchell, we shall notice only those which seem to us most important. All the forms of disordered movement are far more frequent in the arm than in the leg, and when they exist in both, they are more severe in the arm. The leg is usually very slightly affected. The spasm may, when slight, be confined to the hand; when it involves all the parts of the arm, the hand is always the most severely affected. In the hand, the interossei suffer especially. They never occur in limbs the seat of an absolute paralysis. In some of the most marked cases the affected was as strong as the healthy limb. In certain conditions the spasm is increased or diminished. It is always slighter and often ceases when the limb is at rest; being increased or produced by voluntary effort. It is increased by an effort to overcome it by passive force, by cold, and by fatigue; and lessened by warmth, by rest, and generally during sleep. The ataxy is not increased by closure of the eyes. The affected muscles are sometimes of normal bulk, sometimes actually hypertrophied, sometimes wasted. The positions assumed by the hands and feet in some of the cases reported in this paper are well shown in an accompanying plate.

Dr. A. L. GALABIN is the author of an article *On the Causation of the Water Hammer Pulse*, in the course of which he shows that the quality of suddenness which is so characteristic of the pulse of aortic regurgitation, is usually less well-marked in the carotid and subclavian arteries than in the radial artery, and even in some cases than in the dorsalis pedis. In other words, it is a quality which is gradually developed as the pulse-wave recedes from the heart. Now, he contends that, if it depended wholly upon the blood being thrown into empty vessels, it ought to be best marked in the arteries nearest the heart, as these are most completely emptied during the diastole. By a series of careful observations with the sphygmograph, he has succeeded in demonstrating the fact that the water-hammer pulse occurs occasionally in cases where the aortic valves are healthy, and that in others a tendency to it may often be seen in the tracings obtained by this instrument from some of the smaller arteries. The same thing was seen in the tracings obtained from the smaller tubes of a schema representing the arterial system, made up of bifurcating elastic tubes and adapted to an artificial heart of India rubber.

The author hence concludes that the transformation which the systolic portion of the pulse of aortic regurgitation undergoes, and by which the quality of suddenness is developed, is only an exaggeration to an extreme degree of a change which takes place to some extent in the normal pulse.

J. H. H.

ART. XXVI. *Public Health Reports, and Papers presented at the Meetings of the American Public Health Association in the years 1875-1876, with an Abstract of the Record of Proceedings, 1876.* Vol. III. 8vo. pp. 241. New York: Hurd & Houghton, 1877.

THE present volume of this valuable series is made up of the more complete and important papers presented at the meetings of 1875 and 1876. The essays are skilfully grouped under certain general heads. An analytical table of contents exhibits, under each heading, not only the subject of each article, but also a few lines indicating the train of thought in each.

DR. AUSTIN FLINT treats of *Food in its Relations to Personal and Public Health*. Alimentation, unlike all the physiological processes dependent upon it, is under direct voluntary control. The latter can be reached, aside from drugs, only through the former. Mind and body, and even virtue and vice, depend on proper nutrition. The chief aim of the essay seems to be to combat popular errors as to the dangers of eating too much or too often. Appetite and liking are believed to be much safer guides than many people think. Variety, too, is desirable. It is a mistake to suppose that a healthy stomach is strengthened by confinement to a few easily digested aliments. Long intervals between meals are usually anything but beneficial. Growing children are too often practically underfed, of course with baneful results. This usually proceeds from mistaken ideas among parents and teachers. With girls, a feeling that a hearty appetite for substantial food is vulgar and unladylike, does infinite harm. The influence of semi-starvation upon themselves and the next generation is as obvious as it is deplorable.

HON. EMORY WASHBURN, of Cambridge, Mass., contributes a paper on *Expert Testimony and the Public Service of Experts*. The relation of this topic to public health is perhaps rather remote. From the social and professional eminence of the writer, however, we had reason to look for some new light upon a subject so much discussed of late years, and with such differing degrees of wisdom. The present effort scarcely meets our just expectation. The author disappoints us by telling us only what has been already told again and again; while he quietly ignores the objections that have been urged against the course he proposes. His confidence in expert testimony seems small at best, and he complacently echoes the flings of English judges and writers. The actual exigencies, and the manifold difficulties in the way of any attempt to overcome the recognized evils, are scarcely noticed. The idea that appointment of experts by the courts would stop the vulgar clamour against them, is hardly compatible with what we know of the dispositions of men and the spirit and tendencies of English law.

A paper entitled *Expert Supervision in Construction of Public Institutions*, which, as here presented, is very brief, yet contains most important facts and suggestions. DR. L. H. STEINER makes a very forcible and very just presentment of the inadaptedness, bad construction, unwholesome or otherwise objectionable arrangements, which nearly always characterize, to a greater or less extent, our buildings for public purposes. To avoid a continuance of mortifying blundering, he advocates the expert supervision of public institutions. Each building erected for a definite purpose should possess an exact adaptation to that purpose, whether it be as a school, a hospital, or a prison. Especially should each and all be so ordered, that its inmates or frequenters shall receive no injury from it. How well this obvious duty of the State toward the people is performed, in building, or allowing to be built, jails, hospitals, almshouses, schools, public halls, and even churches, we need not take time to inquire. The facts

recently ascertained about our own city school-houses furnish sufficient and most painful illustration.

The employment of expert supervision, rendered obligatory by law, whereby no structure for public purposes should be planned or built, except under the inspection of an expert, conversant not only with general sanitary principles, but also with the special needs to be met,—this is the remedy here suggested for the deplorable waste of money, health, life, and national resources, which flows from the gross ignorance and incompetence too often entrusted with the creation of our public buildings.

Adverting to the important, and often very delicate questions, which arise from the interference with individual liberty, exerted or proposed, by legislation invoked in aid of public health, Dr. J. S. BILLINGS, in a paper entitled *Rights, Duties, and Privileges of the Community in relation to those of the individual, in regard to health*, exhibits the necessity of interesting and informing the lawyer, as well as the physician, engineer, and architect, concerning sanitary principles and efforts. In devising legislation, the assistance of a legal mind thus enlightened would be most valuable.

Dr. STEPHEN SMITH, of New York, contributes a most admirable exposition of the *Influence of Private Dwellings and other Habitations on Public Hygiene, and the relations of Sanitary Authorities to them*. Every family creates nuisances, dangerous to itself and to its neighbours. Skillful appliances, intelligently supervised, can reduce the nuisance and the danger to a minimum. The doctor's picture of the filth-engendering capabilities of a family is altogether too graphic to be pleasant. His description of the emanations from the family wash, and even of the appetizing fumes from the kitchen, is almost enough to make one forswear civilized life forever. A forcible illustration of the influence of household uncleanness upon mortality is drawn from the results which followed the institution of sanitary inspection of tenement houses in New York. In these dwellings the Health Board recently received power to exert effectual interference with whatever it deemed detrimental to public or private health. Into the separate houses of separate families, however, it was not allowed to go, except on special occasion. Notice the extraordinary result. One-half the population of the city, living in the tenement houses, furnished, at the time the Board began to exercise its almost despotic powers, 75.7 per cent., or more than three-fourths of the total number of all the deaths in the city. This fell nearly 7 per cent. the first year after the new measures, two more next year, and in five years had become reduced to 64.8 per cent.

Strictly speaking, one would suppose the officials would have as much right, and even obligation, to enforce the correction of disease-producing abuses in the house occupied by one family as in that tenanted by many. Had the written law not made this discrimination, how much greater had been the beneficent work of the Board. For, while unwholesome conditions were doubtless more numerous in the great aggregations of indigent humanity, it is notorious that they are constantly found in the homes of the middle classes and even of the wealthy and cultured. In England, the blood of royalty shows its common human weakness by yielding to sewer poison in its own palaces.

The course pursued with such success in the tenements consisted in semi-annual and special visitations, by which cleansing, white-washing, disinfection, proper condition of drains and cellars, etc., were secured. In the one year following the beginning of this system, nearly fifty thousand "ventilating windows" were constructed in the houses of this class.

"Sanitary architecture in our dwellings, and sanitary supervision in their management," is a great want of to-day in American communities. No building

should be allowed until its plans and specifications have been examined and approved by competent sanitary inspectors. Certain prescribed requirements in regard to drainage, heating, lighting, and ventilation would soon come to be understood and met, even by ordinary architects and builders. But we are not over sanguine as to the faithful enforcement of wise ordinances in these days of demagoguery and municipal rotteness.

Under the head of Dangerous Employments and Harmful Processes, Professor E. S. Wood, M.D., of Harvard, treats of *Illuminating Gas in its Relations to Health*. Workmen in the retort house, which is rootless and freely open at its sides, are exposed alike to great heat and to cold drafts. This, and perhaps the dust of coal and coke, lead to a large amount of bronchial and phthisical disease.

The sulphuric and sulphurous acid formed by combustion of ordinary gas is very injurious to plant life, and to many objects found in our dwellings. The writer does not seem to regard them as injurious to human health. A variety of gas made from water, and useful for heating, is condemned as excessively dangerous, being odourless, and containing deadly proportions of carbonic oxide. When mingled with some petroleum product, as it is when adapted to illuminating purposes, it acquires odour, and hence becomes much less dangerous.

Dr. GARVIN, living among the gigantic cotton-mills of Lonsdale, R. I., discusses *Sanitary Requirements in Factories—Injurious Effects of Cotton Factories upon the Health of Operatives*.

Accidents from machinery can, and ought to be, largely prevented by instruction and warning from the overseer, and especially by inclosing all cog-wheels, belts, etc., which do not require to be exposed. Catarrhs, dyspepsia, anæmic troubles generally, arrested or imperfect growth, and development, are the commoner results of mill-work, continued too many hours per week, and begun often at a tender age. Infants suffer from the protracted deprivation of their natural food and maternal care generally. The feeding of young infants on artificial food, in order that the mothers may work in the mills, is justly characterized as little less than murderous.

Acute diseases, except as occurring in infants, do not seem especially favoured by factory life. But ailments dependent on debility and mal-nutrition, and especially upon continuous labour at an age which should be devoted to growth and development of body and mind, are lamentably prevalent. Laws prohibiting or limiting youthful labour have not been, but ought to be, most rigidly enforced.

A curious apparent anomaly is noticed in regard to the victims of consumption. While English weavers, descended from generations of operatives, and hank, stunted, or deformed, are far less likely to contract phthisis than dyspepsia, the fresh and plump young Irish, just come from rural life, fade away with consumption with alarming rapidity.

Three papers deal with the extremely important, though but little appreciated, subject of Marine Hygiene. Writing of the *Safety of Ships, and of those who travel in them*, the distinguished and efficient Supervising Surgeon General of the Marine Hospital Service, Dr. JOHN M. WOODWORTH, states that during 1875, 1502 American ships, and 85 foreign ships, on our coast, suffered disaster. Of 20,215 lives imperiled, 888 were lost. Wrecks, involving total loss, amounted, ships and cargoes, to some ten million dollars. Similar facts relative to British shipping are stated. With Mr. Plimsoill, Dr. Woodworth believes that a terrible proportion of this loss is due to unseaworthy ships and unseaworthy sailors, in other words, to preventable causes. Rigid inspection of vessels and men is perfectly practicable, and would be effective of much good. As already pointed out in his Marine Hospital Service Reports, the medical officers of this organization could be made examiners, before whom should appear every seaman offering him-

self for shipment. Without their certificate of soundness, shipment should not be allowed. Excessive competition in the carrying trade causes every effort to be made to reduce expenses. Vessels go short-handed at best, and when part of the crew break down while at sea, the consequences may often be disastrous.

Laws exist providing for the inspection of steam vessels; though in some cases its execution has been but a farce—apparently from the corruption of the officers. But, for sailing craft, nothing prevents owners from sending rotten ships to sea as long as they continue to hold together. And when, finally, they fall to pieces or become mere sieves, they are not apt to be safe in port.

Dr. GIBON, U. S. N., has an excellent paper upon the *Need of Sanitary Reform in Ship-life*. Air that is breathed over and over again and saturated with animal exhalations, is the grand evil that destroys the sailor. And, to make bad worse, it is a fact, incredible as it may seem, that in some of the finest ships in our navy the bilge is ventilated by gratings that open upon the berth-deck. All decks, too, are by the tyrant *custom of the service*, deluged with water daily. Phthisis and rheumatism, the two great scourges of the sailor, are the result of this foul and damp atmosphere. Syphilis, worse than the former in that it is indefinitely communicable, is borne all over the world in ships. The foul recesses of fore-castle and hold, and the indescribable filth of the bilge, form admirable lurking-places for germs of zymotic disease.

These sources of disease are very largely capable of removal; but ignorance and indifference in the merchant service, and the same, with the addition sometimes of the absurd, jealous arrogance of the average naval commander, in the national ships, obstinately resist all efforts at improvement.

Thirty years ago, as Dr. A. N. BELL tells us, in a paper on *Marine Hygiene on board Passenger Vessels*, emigrants to this country met with a frightful mortality on ship-board. Ten deaths to the hundred passengers, he says, was considered a favourable result; while twenty to thirty was not uncommon. Partly owing to regulations established at the ports of departure, but much more to the increased use of steamships, the days of such awful slaughter are past forever. Of late years, the steerage deaths on steamers have been usually considerably less than one in a thousand, while in sailing vessels, it has varied, from 1864 to 1873, between five and fifteen.

Very briefly, but suggestively, Mr. JAMES T. GARDNER, Director of the State Survey of New York, points out the *Relations of Topographical Surveys and Maps to Public Health*. Only when the prevalence of diseases shall be fully and accurately known in connection with local conditions of surface, and sub-soil, and strata, can we comprehend the relations which exist, and become capable of intelligent preventive action. The amount of moisture retained in a soil, for instance, upon which largely depends the greater or less amount of certain maladies, is determined by the combined operation of the surface configuration, the character of the soil, the nature of the underlying rock, and the shape, form, or slope of its strata. Combine the results of surveys, topographical, geological, and sanitary, of a large area—and the writer believes that the principal causes of disease will become obvious, and remedies practicable.

An essay by Dr. EZRA M. HUNT, of New Jersey, upon the *Sanitary Appointments and Outfittings of Dwelling Houses*, urges the necessity of keeping human excrement out of the sewers, and counsels its removal by tubs or buckets. His ideal system calls for sewers large enough to be freely patrolled, and containing a tramway. Into the general cavity enter from each house waste water pipes. From it a recess, or branch, passes beneath the sidewalk to the cellar or basement of each house. Here, through a locked gate, the buckets or tubs are received, placed in the car upon the tramway, while cleansed buckets are left in their

place. Other kinds of house-refuse, each in separate vessels, could be removed in the same way. Of course, the key to the door from house to recess is kept by the householder. If desired, another door, from sewer to recess, could be arranged, to be controlled by the sewer-police. As thus protected from excremental contamination, the writer thinks sewage may safely empty into streams.

Dr. ELISHA HARRIS reports upon *Laws, Provisions, and Methods for securing the Benefits of general Vaccination throughout the Country*. The lessons drawn from foreign experience are noted, and suggestions made as to means by which vaccination may be rendered systematic and complete.

In a recent epidemic of *Scarlatina in Baltimore*, Dr. JOHN MORRIS finds corroboration of the views advanced by Dr. Alfred Carpenter as to the power of decomposing and diluted blood, from slaughter-houses, to give origin to this disease. A very small stream of water received the drainage of several slaughter houses, and after running a little more than half a mile became stagnant, in a low place. (The writer does not state whether the brook is here lost or not.) Water taken from this spot was disgustingly bad and putrid. Of a series of over 2000 cases, "East of Jones's Falls," the first occurred in this neighbourhood, and the disease was very malignant and very fatal. One physician lost his first five cases, on one street in this district. The vicinity of another creek similarly defiled has been the seat of "a very large number of cases" during the past year.

Though not confining himself closely to Dr. Carpenter's idea of blood as alone furnishing the specific poison, the writer is disposed to believe that the virus arises from animal matter decomposing under certain conditions.

C. T. LEWIS, Esq., Secretary of the Chamber of Life Insurance, New York, contributes a scholarly essay in which he contrasts the *Hygiene of Ancient and Modern Times*, and exhibits the *Influences of Civilization on the duration of Human Life*. In the ancient civilizations the State, or Society, was paramount. The individual must ever yield himself to the public. Early Christianity magnified the importance of the single man. Modern civilization reconciles and blends the two purposes into one. For, though the two principles seem to be, and perhaps upon a limited view really are, conflicting, yet in the wide field of human progress they are in perfect harmony.

Some of the more obvious and powerful causes leading to greater mean longevity in the human family are thus noted: the better care taken of infants, and also of the sick, infirm, and aged; the control acquired over epidemics, as the plague, cholera, scurvy, and many others, and eminently the smallpox; and, finally, a class of agencies which may be designated as hygienic and sanitary reforms generally.

To those who would find in natural evolution, by survival of the strongest, a sounder mode of progress for the race, our author points out the enormous cycles of ages required thus to bring men even to the condition in which we find them to-day in Borneo, Australia, New Zealand, and Patagonia. Do these results compare favourably with the work of civilization, as achieved during that single movement of the world's second-hand, which we call the period of authentic history? Among the races just named, man is old at forty, and dead or decrepit at fifty; while female beauty, at its height at fifteen, begins to decay at twenty-two. Wherever man enters upon any progression different from that of the brutes, it is by the influence of individual and hereditary culture superseding natural selection. Intellectual and moral forces rule where once mere animal power held sway.

Treating of *Summer Resorts for the Debilitated Children of our Cities*, Dr. JEROME WALKER shows that experiments already made have fully proved the very great usefulness of country and seaside air, even if for but a few weeks or

even days, in preserving the lives of this class of our population. It seems, too, by no means impracticable to provide sanitary villages in healthful rural districts, to which temporary colonies of city poor could be successively sent during the hot months. Probably, however, a greater and more lasting good may be effected by enabling the poor to live in the country, with cheap transportation to their city work. Will not some George Peabody build a model village, near a great city, with cheap railway connection?

In a report upon *hospital ventilation*, CARL PFEIFFER hits the nail squarely on the head when he concludes that only by "forced ventilation"—preferably by a fan driving fresh air in—can purity of atmosphere be secured at all times and seasons. It is more than twenty years ago that the immense superiority of this method was established by the most conclusive competitive trials and experiments under the observation of such men as Pettenkofer, Grassi, Peccet, and Seifert. Morin, a great advocate of the aspiration method, confessed its inferiority after observing the two systems side by side in two halves of one building. The experience of American hospitals for the insane has taught the same lesson. It is not designed to maintain that aspiration never gives fair, or even excellent, results; but, simply, that in effectiveness, uniformity, and certainty, it cannot compete with propulsion.

Referring to the fact that what we call "sewer gas" has proved insusceptible to analysis, or to identification as any given chemical combination, Prof. W. H. BREWER, of the Scientific School at Yale, in a paper entitled the *Gases of Decay, and the Harm they cause in Dwellings, etc.*, ventures the hypothesis that decomposing gases may contain and support organic germs, just as liquids do infusoria. Several considerations, not needful to be here repeated, seem to indicate that the effects produced by sewer gas are not of a character analogous to those known to proceed from any gaseous compound simply. Typhoid fever, originating from poison borne on the emanations from a sewer, is liable to be passed on from the original recipient to others. No one supposes that the gas, as such, can be handed on from one human body to another. There seems to be no reason why certain gases, or mixtures of gases, in a state of change, should not support and nourish peculiar organic germs, just as decomposing fluids are known to do.

Prof. HORSFORD, of Cambridge, has hit upon the "happy thought" of a *New Profession in the Service of Hygiene*. He would have a man well taught in mechanics, physics, hydraulics, chemistry, and in all sanitary lore, who should be called in to relieve those numberless miseries which so grievously afflict, in our day and generation, the dwellers in houses "with all the modern improvements." Whether the Professor writes in joke or in earnest we are not sure; but that, in all our cities, men who should fill the requirements here sketched would earn fat fees and immeasurable gratitude, we feel quite certain.

Recognizing the very great need for the *Popularization of Sanitary Science*, Prof. CLAYPOLE, of Antioch College, regards the schools as the best means available to this end. But to make such teaching vital and efficient in the public schools, teachers must be far better grounded in the theory and practice of hygiene than they now are. Improvement must begin at the top. Universities, academies, and normal schools must send out their graduates endowed with some acquaintance with the conditions which make for health or for disease in the habits of the individual and in the structure and surroundings of the school, the home, and the city. And the authorities which build school-houses must be forced to make them what they should be, and no longer allowed to stunt, and stifle, and blind, and poison the precious charge confided to them.

GEORGE E. WARING, Jr., sanitary engineer, points out the errors and dangers most liable to attend country houses, even of the more expensive class. We need hardly say that it is from the disposal of refuse and excrementitious matters, as a first cause, that nearly all these actual or threatened ills arise.

Some half a dozen articles we omit to notice, not so much for any want of interest or value, as because their teachings have come before our readers in other connections.

The work is handsomely printed on heavy, tinted paper, by the Riverside Press; is substantially bound in cloth. In both matter and form it is a creditable and useful book.

B. L. R.

ART. XXVII.—*Surgical Observations on Gunshot Wounds of the Hip-joint.*

By B. VON LANGENBECK, Professor of Surgery in the University of Berlin, etc. etc. Translated by JAMES F. WEST, F.R.C.S., Senior Surgeon to the Queen's Hospital, and formerly Professor of Anatomy in Queen's College, Birmingham. 8vo. pp. viii. 63. Birmingham: White & Pike, 1876.

As the result of his experience during the Franco-Prussian war, Professor Von Langenbeck has contributed to surgical literature two essays, the first of which, on Gunshot Wounds of the Hip-joint, has been translated by Mr. West, of Birmingham, who also promises to do the same kind office by the second essay, which is entitled, "On Resections as seen in the light of their Results." The first essay, the one with which this notice has to do, was originally read at the first German Surgical Congress, and bears abundant marks of that thoroughness of investigation, which, when exercised upon ample material, leads to the exhaustiveness so often possessed by German monographs. Langenbeck's first intention was to speak of gunshot wounds of joints as a whole, but rightly considering that the special questions which arise in connection with the individual joints were such as to prevent the laying down of any abstract principles of general treatment, he decided to contract his scheme, and has confined himself to the discussion of gunshot wounds involving the hip-joint.

Statistics hitherto obtained, in Langenbeck's judgment, are not sufficient to establish with accuracy the principles upon which gunshot wounds of the larger joints should be treated; nor, from the nature of the case, is this state of things likely to be soon changed, or statistics, suitable to found accurate generalizations upon, collected. While thus condemning the bulk of our statistical inquiries, the Professor is particular to inform his readers that the defects are in no great degree the fault of observers, but are attributable to the exigencies of military surgery. The sudden accumulation of severely wounded, and the inevitable confusion attendant upon a great battle, must ever present great difficulties against that thorough study and primary classification upon which the appropriate treatment of each case of hip-joint wound must depend.

The important question in all wounds of the hip-joint is to determine which case will be best treated upon the expectant plan, which demands, or will demand, operative interference, and, should resection or amputation be required, to decide *when* the operation shall be performed. It is just here that the special characteristics of each case are of paramount importance. It is this all-important primary knowledge that the military surgeon finds it so difficult or impossible to obtain as the result of his own observation, and it is to contribute to our stock of knowledge on these particular points that the distinguished Berlin Professor has written this *brochure*. Hitherto surgical literature has recorded most unhappy

results from gunshot wounds of the hip-joint, so much so that it has appeared to be a matter of little moment what treatment was adopted, as the few recoveries were pretty evenly distributed between the expectant and the operative plans, and were always rare exceptions. The very hopelessness with which these cases were regarded has contributed its share in preventing military surgeons from giving close attention to the primary examination of them, and our author is most imperative in insisting that upon this primary examination, and the adoption within twenty-four hours of a line of treatment based upon an accurate differential diagnosis then obtained, must, in very large measure, depend the prospect of a successful issue in each individual case. He further undertakes to show that in the Franco-Prussian war, while not a few cases of hip-joint wounds resulted favourably under conservative treatment, many more would have done so had an accurate and early diagnosis been made; on the other hand it is shown that operative interference became an immediate duty in many cases.

Proceeding to the consideration of special points, Von Langenbeck pronounces most decidedly against the existence of non-penetrating wounds of the hip-joint; says he has never seen one in the whole of his long experience; and thinks that their occurrence, if not incompatible with the high rate of velocity of missiles from the arms of precision now in use, must be very rare. The old rule for locating the joint is endorsed, and we find the following definitive formula: "If the entrance or exit of the shot, or the direction of the shot canal encroaches upon a triangle whose base intersects the trochanter major, and of which the femur and anterior-superior iliac spine form the points of an acute angle, the joint will probably be implicated." Gunshot wounds of the trochanter major are always serious injuries, and should invariably be treated as wounds of the joint, for splintering of the neck of the bone is commonly attendant upon them. A bullet striking upon the centre of this process may traverse the neck of the femur and enter the joint, while the elasticity of the cancellous tissue may cause it to close so completely over the track of the modern small missile that no probe can be made to follow by any allowable use of force, and the ball may be thought to have rebounded and dropped out when it is in reality deeply lodged. Two cases are related in which this state of things existed, and both ended fatally. The wound of the joint may be masked by the ball coming from within, and reaching the joint after traversing the bladder, or rectum, or both. In two cases where the bladder was thus involved, recovery under conservative treatment is noted.

Referring to Simons's experiments, which proved the possibility of a bullet passing between the articular extremities of the femur and tibia without injury to either bone, a remarkable case is detailed, in which a bullet, after breaking off a piece of the inner edge of the acetabulum, opened the joint, perforated and split the acetabulum, and in its further passage onwards wounded the bladder *without injuring the head of the femur*. This case can only be explained by supposing that the admission of air forced the joint surfaces apart sufficiently to allow the missile to pass between them. Lodgment of the ball is a very unfavourable complication, as all experience shows, and general reasoning would lead us to expect. In thirty-two fatal cases the ball lodged in no less than twenty-six, while in eighteen cases of recovery the ball remained in only seven times.

Coming next to the symptomatology of these cases we first notice that we may expect complete fracture of the neck of the femur to have the same characteristic evidences of deformity as exist in simple fractures, but experience has shown that considerable injury of the bones may be sustained, and the joint may be opened, and yet the patient present nothing in his appearance to suggest that he is suffering from more than a flesh wound. Many wounds of the hip-joint have thus been overlooked at the very time when it was all important that

the precise nature and extent of the injury should have been known, and, either an immediate resection been done, or conservative treatment decided upon, while in either case further transportation should have been positively interdicted, and absolute rest enforced. The absence of synovia cannot be relied upon as a diagnostic sign, as it is often not seen, though the joint be opened; and especially is this the case when the ball enters back of the groin; on the other hand its presence is of course conclusive evidence that the joint is implicated. A most valuable sign is swelling of the articular capsule, which may be caused by blood, synovia, or other fluids, distending the capsule, or by swelling of its own tissue. It is most readily detected in front, where the muscular planes formed by the adductors will show distinct interruptions. The enlargement of the capsule may be sufficient to push the femoral vessels forward until their pulsations will be felt just beneath the skin. This symptom is regarded as particularly important, and we are told that it will generally be more evident as the entrance wound is more distant from the joint, as thereby the escape of morbid products is made more difficult.

With the progress of inflammation the ordinary symptoms of coxitis, only intensified in degree, will be observed; but it must not be forgotten that, under favourable conditions, a gunshot wound of the hip-joint, where the bone injury is slight, may heal without coxitis. When inflammation is suddenly set up within the joint, some time after the receipt of the injury, a favourable prognosis may generally be made. In those cases where the capsule is wounded and distended with blood, inflammatory symptoms will occur earlier, in from seven to fifteen days, than where the inflammation is secondarily induced by injury of the bones. While fissures may heal without trouble, it is their occurrence which makes injuries of the trochanter major so serious, and they are often the origin of osteo-myelitis.

The well-known fact that injuries of the soft parts in the immediate neighbourhood of the joint often lead to inflammation of it is confirmed by Langenbeck, who further declares that wounds of the iliac bursa, owing to the proximity to, and the communication with, the joint, which generally exists, should always be classified as joint wounds. The tendency to flexion of the femur upon the pelvis is well marked where suppuration in the joint is established, and spontaneous luxation sometimes occurs; but, in Langenbeck's opinion, it is almost always downwards and forwards, and *very* rarely on to the dorsum ilii. Ankylosis is the constant result of curable gunshot wounds of the hip-joint, and although in wounds of the capsule, in which the inflammation has been kept within narrow bounds, recovery with more or less perfect motion may ensue, the aim of the surgeon should always be to favour ankylosis. While in many cases in which life was preserved, but a useless limb remained, others are recorded in which a useful extremity resulted; and Langenbeck's experience has taught him, as that of others has taught them, that a deficiency of one or two inches in the length of the limb is but a trivial one, easily obviated by the yielding of the pelvis and a thick sole. When the loss is greater it is very often an illustration of the imperfect treatment which yet obtains too often in these cases.

The danger of wounds of the hip-joint is well known, and has been attested by the sad experience of all military surgeons; but Professor Von Langenbeck points out one risk which is, perhaps, not usually recognized, namely, that from the density of the enclosing capsule, and the deep situation of the joint, surrounded as it is by powerful muscles, the tendency to retain wound secretions is very great, and in consequence there is increased liability to septicaemia. Out of thirty-nine cases in which the cause of death is mentioned, in no less than thirty-four did it result from septicaemia or pyaemia, while in three others it was caused

by venous thrombosis. In general terms, the danger is proportioned to the extent of bone injury and the general concussion of the parts. If accumulation of matter is not allowed to take place, simple wounds of the capsule, or those unaccompanied by important bone injury, allow of a tolerably favourable prognosis, nine out of thirteen cases recovering. Where the bone injury is proved, and extensive, a very unfavourable prognosis must be given, there being but eighteen recoveries out of seventy-five cases cited in this tract. The statistics of the Franco-Prussian war, however, go to show "that hip-joint injuries are not absolutely hopeless." In all the cases treated by the conservative method, the percentage of deaths was 71.59, and in resections the death percentage was 83.87. The totals respectively given by Langenbeck are eighty-eight and thirty-one. This heavy ratio of fatal results may reasonably be expected to diminish, as the importance of early and accurate diagnosis is appreciated and acted upon by military surgeons. At least this is the anticipation of the distinguished author of the pamphlet.

When there is doubt as to whether there is serious injury of bone, the preference should be given to conservative treatment; but it is not applicable, and should not be relied upon, when there is complete extra- or intra-capsular fracture of the neck. In such cases, or where injury of the acetabulum causes retention of secretions, resection should be resorted to despite the great mortality attending the operation, and this mortality Langenbeck does not hesitate to prophecy will become less as surgeons resort to it, as they do to amputations, within one day of the receipt of the injury. The long incision is advised when resection is to be resorted to, and unnecessary removal of the trochanter major is strongly reprobated. Disarticulation is only to be thought of as a primary operation, and if the proper moment for its performance is past, it is better in extensive gunshot fractures to do a preliminary resection, in the hope that at some future time the patient may be in a condition to bear an amputation. This plan is thought by Langenbeck to receive strong support from the statistics of reamputations collected during the Rebellion in this country.

The successful conservative treatment of wounds of the hip-joint depends largely upon two things, immobilization of the joint and weight extension, and where they can be properly applied and maintained from the first much is accomplished in cases which ought to be curable. But it is very difficult, often impossible, to fulfil these indications upon the battle-field, where only the apparatus most easily applied and most readily transported is to be obtained. Nor is it always practicable to sift the cases and spare the most serious ones further carriage by keeping them in field hospitals, for field hospitals themselves will often require to be removed, experience having shown that considerations of strategy will ever outweigh the claims of the Geneva cross. Much has been done to alleviate the miseries of war and the sufferings of the wounded; but to press the claims of humanity, in the face of men frantic with excitement and straining for victory, is futile; they are freely hazarding their own lives, it is hardly to be expected that they will regard those of others. The Geneva Convention has accomplished, will yet accomplish, much; but war and humanity, like fire and fuel, exist together only in the destruction of one by the other. As this notice is written, the same sad tale is repeated from the ancient parts of the earth, and from the birth-place of the human family come mutual recriminations concerning the treatment of the wounded. Seeing, then, that the Geneva Convention cannot accomplish all that was hoped for by its originators, Langenbeck thinks that the energy and inventive genius of military surgeons must be directed to devising such apparatus as will best enable us to transport patients suffering with wounds of the lower extremities in a state of immobility, immediately after the first dressing. Plaster of

Paris bandages require too much time and too many skilled attendants, and some form of light splint is most desirable. In our author's judgment Bonnet's wire hose are too bulky to be carried into the field, and in the after-treatment are too difficult to keep clean. After referring to several others, he settles down in the opinion that the Austrian zinc splints of Sclön are likely to best suit the indications. The second essential element of successful treatment of hip-joint wounds, extension by a weight, can be readily applied at a field hospital, and should be kept up from the moment of its first application until the ankylosis is sufficiently firm for the patient to walk with the joint guarded by an immovable plaster or paste bandage.

Unnecessary probing of the wound should be avoided when it is intended to pursue a conservative course, as thereby additional irritation and often renewed hemorrhage may be excited, by which the possibility of the shot canal healing without suppuration is diminished. Dilatation of the wound may, however, be very properly practised when there is retention of secretions, and in conjunction with the incisions necessary to a thorough investigation of the condition of the parts, must always be resorted to whenever the question of operative interference is entertained. Bone splinters should be removed when they lie loose in the track of the wound, or when their presence is likely to obstruct the discharges therefrom; but repeated and vigorous attempts to remove them in recent wounds are injurious, venous thrombosis being more apt to occur after such measures, while the liability to infiltration of the surrounding parts, and the subsequent absorption of morbid products, is increased. On the other hand, free incisions made early are of great value in facilitating the discharge of fluids, and are too often neglected or deferred too late. When infiltration has occurred, and septicæmia has set in, they are useless. Should the incisions made to evacuate matter reveal an overlooked fracture, Langenbeck would prefer to continue treating the case on the expectant plan, and under no circumstances would he attempt or advise the performance of a resection until the fever had subsided. As might be anticipated, the German treatment of recent joint wounds by ice is preferred to that by cataplasms, recommended by Dupuytren, and generally followed by French surgeons. With the antiseptic method of Lister our author has had little experience, but that little has been so favourable to it as to lead him to think that it will ultimately prove of great value in properly selected cases; that is, in those where the extent of bone injury is slight, and the surrounding circumstances are suitable for carrying out conservative treatment.

The cases upon which, in large measure, the conclusions of this pamphlet are based, are grouped in tables at its end, a method which, from the facts that the thread of the argument is preserved and that better facilities are afforded for reference, strikes us as much better than that of interpolating them in the text. No. I. gives brief histories of twenty-five cases successfully treated on the conservative plan. Table II. gives sixty-three cases which, under the same plan of treatment, resulted fatally. Table III. comprises all the cases in which resection of the head of the femur was done, thirty-one in number, of which four recovered, in one the result was unknown, and in the remainder death ensued. In Table IV. will be found thirteen cases of disarticulation of the thigh, and, in all, the uniform result was death. In these tables sufficient details are given of most of the cases to make them worthy of special study. The English translator has added in an appendix an abstract of the cases recorded in Circular No. 7, containing the results of our own experience in the late Rebellion.

It may seem as though the length of this notice was out of all proportion to the size of the pamphlet noticed; but this essay claims attention alike from the eminence of its author and the importance of its subject. Many a portly volume which requires laborious investigation to ascertain and master its contents, can be

summarized in a few sentences; but this modest little tract presents an array of observations which could hardly be analyzed in less space than we have given to it. Baron Von Langenbeck has too robust a constitution to resort to padding, and he has given, in somewhat crude form, a model of condensation which many might well follow.

The translator appears to have done his work well, and in the preface has taken notice of the labours of our own Surgeon-General's Office in appreciative words of eulogy. In presenting this treatise to English and American readers, Mr. West has done a good thing for surgical literature. S. A.

ART. XXVIII.—*Retarded Dilatation of the Os Uteri in Labour.* By ALBERT H. SMITH, M.D., Lecturer on Obstetrics to the Philadelphia Lying-in Charity. 18mo. pp. 46. Philadelphia, 1877.

DR. ALBERT H. SMITH is always sure of a prompt and attentive hearing on the part of his professional brethren, for his contributions to obstetrics and gynecology are always plain, practical, and bear the impress of personal experience. Even though the presentation of his views should not invariably carry conviction of their truth to all, nevertheless any dissent will always be respectful, if not qualified and partial.

The first part of this pamphlet is devoted to *Delays from Conditions of the Cervix*; the second to *Delays from Absence of Dilating Wedge*. The first branch of the subject is considered under the two heads of *active* and *passive* rigidity of the os uteri. Dr. Smith gives a graphic description of active rigidity, or spasmodic contraction of the mouth of the womb, and advises as first in importance of all remedies, opium. He then passes in review anaesthetics, chloral, tartar emetic, bleeding, and incisions, rejecting them all. But is not this too absolute, too unqualified a rejection so far as at least some of these therapeutie means are concerned? Certainly some obstetricians have found cases where chloroform or ether inhalations have done excellent service in spasmodic rigidity, and believe the difficulty has been vanquished sooner than it could have been by opium. Dr. Smith refers to anaesthetics as "safe in cautious hands, given merely to relieve pain without causing profound stupor." But profound stupor, scarcely stupor at all, is desired or desirable in such cases. Again, he tells us that these agents diminish the force of uterine contractions, and hence inertia in the third stage of labour may result. Conceding this diminished uterine force, is there not likewise a more than compensating diminished uterine and perineal resistance, and may not the shadow of uterine inertia which seems to darken the third stage be dissipated by ergot opportunely given, and, more than this, by the proper delivery of the placenta? There seems to be a sort of ill-defined dread of anaesthetics in labour, manifesting itself in certain quarters, a dread which the utterances of such a master as Dr. Smith we fear will too much increase. On the other hand, we are glad to see that in a paper¹ presented at the International Medical Congress, held at Geneva, in Sept. 1877, by M. Piachaud, its author asserts, among other conclusions these, that anaesthetics suspend neither uterine nor abdominal contractions, and that they lessen the natural resistance of the perineal muscles; and that their employment is indicated in cases of

¹ Archives Générales de Méd., Nov. 1877, p. 625, and Monthly Abstract of Medical Sciences, January, 1878.

natural labour whenever the labour is delayed or suspended by suffering from anterior maladies, or supervening at the time, and in cases where irregular and partial contractions occasion local and almost constant pain without contributing to the progress of the labour. Courty, in his remarks upon the paper, asserted that chloroform was not indicated in cases entirely normal, but only when the pains were very severe and irregular, and when the patients desired its use; it diminished the duration of labour almost one-half, and by so much lessened traumatism, and it offered the combined advantages of chloral and ergot.

Dr. Smith rejects chloral on the grounds that it is more prostrating in its after-effects than opium, and less controllable than the vapours of ether or of chloroform. On the other hand, a recent obstetric writer (Playfair) asserts that "chloral is the remedy *par excellence*"—so widely will doctors differ! So, too, the tartar emetic which Dr. Smith rejects, finds a firm supporter in Dr. Meadows.¹ Not a word can be said except in commendation of the positions the author takes as to bleeding and incisions in the treatment of spasmodic rigidity of the os uteri.

In considering "the second form of rigidity, the *passive*, or, as Dr. Hodge has called it, the *physical*," Dr. Smith remarks:—

"This is not a mere functional condition, dependent upon constitutional causes, but is a genuine rigidity, a want of distensibility, dependent upon tissue peculiarities. It may vary from the simple firmness of tissue found in the cervix of many primiparæ of advanced years, as a want of true physiological softening, to the cartilaginous hardness of a fibrous or malignant degeneration. Unlike the intermittent paroxysmal condition of which we have been speaking, attended with general and local symptoms of nervous and vascular derangement, it offers a continuous resistance; the os uteri is natural in its character; its margin round and well developed."

Now it is difficult, impossible, to understand how the os uteri can be "natural in its character" with "the cartilaginous hardness of a fibrous or malignant degeneration." That classification of rigidity of the os uteri which embraces but two divisions is obviously imperfect. Neither as to pathology nor as to therapeutics can the rigidity dependent upon cartilaginous hardness of fibrous or of malignant degeneration be included with that where the os is natural. The divisions which Dubois made seem to us preferable to Dr. Smith's; they were *pathological rigidity*, *spasmodic*, and *anatomical*, or, as Pajot terms the last, *mechanical*. Cases where there are such structural alterations as we have quoted from Dr. Smith, would be included in the first of these classes.

In the treatment of "passive rigidity," the author includes "means to soften the indurated tissue," and those "to force open the os." He regards the most valuable of the former a *douche* of water at a temperature of 105° to 110° F., by a Davidson's syringe, the douche to be repeated every hour or two as long as necessary; while the simplest of the latter is "*traction*" by the finger upon the anterior lip, a procedure useful in almost any case of labour not attended by spasmodic rigidity."

From Scanzoni's statistics we have learned that, in 4000 labours, there occurred ten cases of the form of rigidity we are now considering, while there were rather more than fifty of spasmodic rigidity; we cannot help thinking that, if this digital dilatation which is pronounced so useful becomes the rule in obstetric practice in perfectly natural labours, the difference will be still greater, the number of cases of spasmodic rigidity be much increased. When obliquity of the uterus delays dilatation, drawing by the finger the os to the pelvic axis during "a pain," or where the presenting part is "hooded" over by the anterior lip, similarly lifting off that hood, it seems to us are the only proper uses of the finger in assisting in

¹ Manual of Midwifery. Philadelphia, 1876.

the first stage of normal labour. We remember very well what the oral instructions in this regard were of one of the greatest of American obstetricians, the late Dr. Hodge, and we find in his printed words the following:¹ "If the os uteri afford undue resistance, no mechanical measures should be adopted, such as pressure or traction by the fingers, as recommended by some physicians," etc.

After pointing out the value of traction in this form of rigidity, Dr. Smith passes to the consideration of India-rubber dilators, giving a very decided preference to those of Barnes, and wisely insists upon always using water for their distension. We have generally used the Molesworth dilators, partly because of their easy application, and their less liability "to get out of order," but doubtless Dr. Smith's preference for the others is just.

"After dilatation has progressed far enough," says Dr. S., "we have an admirable aid to dilatation in the obstetric forceps." We apprehend that here Dr. Smith will meet with the greatest number of dissenters from his teaching, for the practice advised is so contrary to one of the fundamental rules hitherto laid down by almost all teachers of obstetrics. Dissent, indeed, he seems to have been prepared for, since he makes a plain and strong defence.

Now it is not necessary to seek from Duparcque or Velpeau, or any other of older authors, illustrations of ruptures of the uterus from the application of the forceps, the os being undilated, for we have at hand a recent authority whose statement is quite sufficient. Winckel² includes in the *etiology of ruptures of the uterus*, "the premature application of the forceps with an imperfectly dilated os; the edges of the blades then cut the lips of the os in different places as they slide off; this mode of occurrence I have frequently seen, and have published one such case." Nevertheless, Dr. Smith's practice has a good foundation, not only in his own experience but in the teaching of Dr. Barnes more than seven years ago. The latter spoke as follows:—³

"When the forceps will pass—and it is quite possible to apply it when the os will allow three fingers to pass as far as the knuckles—this instrument may serve to dilate further. But this must be done with great caution. The head being grasped, you may draw steadily down, and, by keeping up gentle traction, the wedge formed by the blades and the head will gradually dilate the os, perhaps enough to allow it to pass, and thus save the child's life."

So, too, Dr. Smith is confirmed in his position as to the use of the forceps by the recently published experience of Dr. Isaac E. Taylor.⁴ In a most interesting paper read before the New York Academy of Medicine, this accomplished obstetrician narrated the successful use of forceps for dilating the os. He gives a representation and description of what he terms his *small forceps*, the width of the blade being one inch and three-eighths; using this when the dilatation of the os was less than two inches, in fifteen or twenty minutes the dilatation permitted the application of a stronger and larger instrument. He states that in some of the cases of this early application of the forceps, "the object was simply for the instrument to retain the head of the child in contact with the os uteri during and after a pain, and in some cases aid in flexing the head when the vertex presents, so that the occiput may be put in apposition with the os tinea, and thus become the natural dilator of the cervix."

In the light of these quotations there would be less hesitancy, if any at all were felt before, in following Dr. Smith's practice. Moreover, it will be observed that

¹ System of Obstetrics.

² The Pathology and Treatment of Child-Bed; translated by Dr. J. R. Chadwick, Philadelphia, 1876.

³ Obstetric Operations.

⁴ What is the Best Treatment in Contracted Pelves. New York: D. Appleton & Co.

Dr. S. recommends the forceps of Davis or of Hodge. Now we must think that when the os is sufficiently dilated for the easy application of the Davis forceps for example, it is so well dilated that the head will not tarry long in its exit if there are vigorous uterine contractions. So, too, the introduction of forceps within the uterus has something more than a mechanical effect, not merely dilatation and traction that are accomplished with the instrument; it has, as so well pointed out by Tarnier¹, a *dynamic* action, "the introduction of the instrument, sometimes of one of the blades only, stimulates the uterus and arouses contraction so energetic that sometimes the expulsion of the infant takes place without uniting the blades or exerting any traction." May not this dynamic action be as important an element of the success of his practice as either dilatation or traction?

We think it best to give the author's own words as to the forceps and their mode of use, and therefore give the following extract from the author's pamphlet.

"They must be forceps having blades of a shape to fit closely to the head, not increasing the bulk of the cranium in passing through the cervix, allowing the soft tissues of the head to bulge through the fenestra and protect the uterus from any pressure; they must, therefore, have oval fenestrae, upon the Hodge or the Davis model; they must be applied conscientiously to the sides of the head (the only uniform surfaces adapted to receive the uniform concavities of the blades) in the direction of its long axis; and traction must be made in imitation of nature's efforts, the force from before being simultaneous with, and precisely similar in its action to, the force from behind; the uterus and the forceps must act together and alike; the traction must be in the line of the pelvic axis; it must be intermittent; it must be direct, with no confusing lateral movement; and if these conditions are fulfilled, there can be, I assert fearlessly, no more danger to the uterine tissues from the head coming through in the grasp of the forceps than in passing without them. When, then, the os uteri is sufficiently dilated to allow the introduction of the blades, they may be carefully applied, and during each uterine contraction the head may be drawn down gently, and with as little compression as may be required to keep the blades in place. We have then nature's own dilator, supplemented by art simply for the increase of its powers, without any change in the method of action, no new plan of operation being introduced."

Having devoted so much space to the consideration of the author's treatment of delays from conditions of the cervix, we shall only briefly notice that of delays from absence of presenting wedge.

Dr. Smith divides these delays "into those which depend upon causes connected with the contraction of the uterine body and those resulting from faulty relations of the presenting mass with the pelvic strait."

The agent in which he has the most confidence in simple inertia of the uterus is quinia; the form preferred is the bisulphate, and the dose fifteen grains. Furthermore, he states, "I do not hesitate to give it in every case, because, even when there is no decided inertia at the onset of labour, there may be a failure of the powers of the mother, from early exhaustion and fatigue, and we get the benefit of the quinia in diminishing this tendency and also in promoting the condensation of the uterine fibre after the delivery of the placenta," etc. While heartily agreeing with Dr. Smith as to the value of quinia in certain cases of ante-partum uterine inertia, we are not prepared to believe in the common use of this agent in cases of parturition; indeed, such wholesale application, and the argument for it seems very much like the punishment inflicted by an angry Teuton upon his silent son for *thinking* profane words!

A just, and possibly needed, warning against the use of ergot is given, and the respective forms of inertia from excess of liquor amnii, from irregular contrac-

¹ Nouveau Dictionnaire de Médecine et de Chirurgie Pratiques, vol. xv.

tion and from premature labour are considered, and their appropriate treatment presented.

The remaining class of cases in which there are conditions interfering with dilatation of the os in labour, are those depending upon the relation of the presenting mass to the pelvic brim: the cases in which, although the labour-pains are vigorous and regularly recurring, and the os soft and dilatable, the fœtus, being prevented from dipping down into the pelvic excavation, cannot impinge upon the rim of the os, and necessarily cannot act mechanically in effecting its dilatation. These may consist either (1) of cases in which there is a want of correspondence in the measurement of the pelvis and of a normally presenting fœtus (*i. e.*, where there is a large fœtus, or a small pelvis), or (2) of those in which, with ordinary size of both, the fœtus may be unfavourably placed for entering the brim."

Omitting cases of mal-presentation, as well as those of marked pelvic or fœtal deformity, the essential treatment Dr. Smith advises is the application of the forceps, which should be applied as soon as the os is sufficiently dilated. He especially dwells upon the value of this instrument for effecting complete flexion in occipito-posterior position.

We have now completed the review of Dr. Smith's very interesting and valuable contribution to obstetrics, and yet we cannot close without a gentle protest against the form and type. Bourgeois is not pleasant for the eyes, at night especially, while an 18mo. is an exceedingly inconvenient form for preservation. A pamphlet of this size may wait in a physician's office almost a lifetime before enough of like linear riches may be added to it to make a volume for binding. The importance of the subject and the ability of its discussion demanded a pamphlet of better appearance than this; a pamphlet handsome in form, easy of reading and of preservation.

T. P.

ART. XXIX.—*A Clinical Guide to the Diagnosis, Treatment, and Prevention of Venereal Diseases.* By S. ENGELSTED, M.D., Physician-in-chief to the City Hospital and Clinical Teacher at the University of Copenhagen. 8vo. pp. 489. Copenhagen (Denmark): Reitzel, 1877.

THE author of this treatise was one of the delegates sent by the Medical Society of Copenhagen to the International Medical Congress held at Philadelphia in 1876, and he has paid us the compliment to dedicate the present work to his "friends in America."

Dr. Engelsted has, with short interruptions, been attached to the City Hospital of Copenhagen for nearly thirty years, and has for the last fifteen years been sole physician-in-chief to the service for syphilis and skin diseases in that large institution. He formerly published several minor works, such as *On Constitutional Syphilis*, *On the Means of Checking the Spread of Venereal Diseases*, *Clinical Studies on Diseases of the Skin and Venereal Diseases*, which have been translated into German. In the present work he has united the experience gained by an extensive public and private practice during many years and under circumstances highly favourable to exact observation. We regret that it is written in a language that is understood by so very few among the profession in this country, and hope that the day may come when we may refer our readers to an English translation: for we do not doubt that, although our own literature has produced prominent works on the same subject, they would be pleased by reading it, and would often return to it for advice. It is quite an original work, and a highly practical one. Throughout the book the author tells very little

about what he has read, but states what he has seen. There is very little theory in it, and while he does not advance any new theory himself, he does not adhere blindly to any of those of his predecessors. Thus, after having briefly stated the two doctrines about unity and duality, he says:—

“Both doctrines are in array; both parties declare that there can be no doubt about which doctrine is the right one. Having been warned by the theoretical discussion in regard to the difficulties that may meet us, we had better, in practice, consider every local lesion after possible contact with syphilis, that is to say after impure coitus, as being possibly the initial symptom of that disease. Daily experience shows us that syphilis does not always begin with an induration, but may be introduced by a soft ulcer or a seemingly inconsiderable fissure. However readily, from a clinical standpoint, we may embrace the dualistic doctrine, we ought never to go so far as to say about a venereal ulcer (soft chancre, or chaneroid) that it cannot be followed by syphilitic symptoms, for by so doing we shall sometimes be mistaken, and give our patients unreliable advice. On the other hand, one is forced to admit that the venereal ulcer in its total aspect and development has characters so well marked, that it is not only justifiable but wise to separate it as a distinct form of disease in the clinical description. This view is strongly corroborated by the consideration of the phagedenic (ser-piginous) form of this ulcer, which, during three, four, seven years, or still longer, may retain the same character and the same inoculability on the same individual and on others; which constitutes a local lesion, increasing by auto-inoculation, not influenced either by mercury or by iodide of potash, but certainly curable by energetic local treatment; which, when once healed, does not break up again, and which, at least as far as my experience goes, never occasions constitutional syphilis.”

The practical sense of the author influences even his nomenclature. He says that the term *condyloma*, much used by English and German writers, has given rise to great confusion, and advises, therefore, to give it up altogether, and only use the two unequivocal terms *vegetations* for the acuminate, non-syphilitic growths especially found with balanoposthitis and gonorrhœa, and *mucous papules* (mucous patches) for the so-called large condylomata which constitute a syphilitic eruption.

He gives complete statistics of the 18,322 cases of venereal diseases he has treated in the new City Hospital from 1864 to 1876. 3463 had venereal ulcer (chaneroid), 7424 syphilis, and 7435 gonorrhœa. In the course of the work he generally confines himself, for statistical purposes, to one thousand of every affection, such as syphilis, gonorrhœa, and epididymitis.

On the skin of persons suffering from syphilis are often found large bluish or lead-coloured spots. They seem to be a little depressed, do not vanish on pressure, and resemble completely what English pathologists have called the *mulberry rash*, and regarded as characteristic of typhus fever. They are most frequently situated on the thighs, the loins, and the lower part of the abdomen. But these lead-coloured patches have also been observed in individuals who were only affected with gonorrhœa, or who had no venereal affection at all. As the author has never found them without finding morpions (pediculi pubis) on the same individual, he thinks that they are only due to the presence of these animals. When the parasites are destroyed by shaving or other means, the rash disappears gradually.

The appearance of *mucous patches* is much influenced by acrid secretions and want of cleanliness. They are therefore more frequent in women than in men, and again much more frequent in those who are not under public supervision. He has found them nine times more frequent in this class than in those who are under such control. As second (repeated) eruption, mucous patches at the anus and genitals are found more than six times as frequently in women who are not under

public supervision as in those who are subject to regular examinations. In the month, on the contrary, they are found more than six times as frequently in those under public supervision. The cause of this difference is probably that smoking is more common among prostitutes than among the other class (servant girls, semistresses, etc.), whilst, on the other hand, the former are obliged to observe more personal cleanliness.

White spots in the mouth (scaly patches, thickening of the epithelium) are sometimes found in persons who are not infected with syphilis.

The chapter on *General Paralysis* is very interesting. The author does not give his own opinion, but relates the results of a pupil of his, Dr. Jespersen, who found syphilis in the history of 77 per cent. of 123 cases of paralysis treated in the Lunatic Asylum of the city of Copenhagen, although attention had not been called to the relation between the two diseases when the histories were written. Jespersen examined himself 34 patients, and proved syphilis in 33, and the thirty-fourth had had ulcers on the genitals. 92 of the 123 had ideas of grandeur. The intellect is always weakened. Spells of mania are common, but always short. Kleptomania was found in eight. The paralysis is general, progressive, and incomplete. Not a single case was cured. On an average the patients died ten months after their admission into the hospital. Some of them lived five years.

The author maintains the *difference between tertiary syphilis and scrofula*. The first is influenced by iodide of potash and in part by mercury, the second not. Patients with tertiary syphilis are almost never re-infected, so as to present induration, mucous patches, etc., whilst recent syphilis is found very frequently in patients with marked scrofulous symptoms.

The chapter on *inherited syphilis*, comprising thirty pages, is full of interest. Syphilitic women often bear many children, but the vitality of the offspring is very small. Abortions are frequent (117 in 256 pregnant women with syphilis), especially in the seventh month (39) and in the third (30). Out of 128 children of syphilitic mothers, 58 were still-born, and 53 died within a year. The author warns us against those who, prejudiced by theories, pretend that inherited syphilis is not contagious. "In lying-in asylums, in hospitals, as well as in private practice, every day brings new evidence that children of syphilitic mothers may be born with undoubted symptoms of syphilis, and evidence is not wanting that syphilis may be communicated from these children, in whom it is congenital, to other individuals." The stage of the mother's disease has much influence on the child. He has seen no small number of women with considerable *tertiary* symptoms on the skin, the mucous membranes, and in the bones, give birth to healthy children, who have continued healthy afterwards. Women who have symptoms of *secondary* syphilis at the time of their confinement, almost inevitably give birth to children who have or will show symptoms of syphilis, even if their mothers have first acquired syphilis during pregnancy. Exceptions from this rule are rare. Women with *latent* syphilis often bear syphilitic children one after another for an indefinite time until tertiary symptoms appear, when the prognosis for the child is much better. Sometimes women with latent syphilis give alternately birth to syphilitic and to non-syphilitic children, which is a corroboration of Virchow's theory, according to which the blood is not permanently infected, but the virus is deposited in deep organs, from which, from time to time, it is again brought into circulation. It is very doubtful if the fœtus can be infected from the father, without the mother being first infected. The symptoms of syphilis that later appear in the apparently healthy mother are, as a rule, characteristic of later eruptions, such as grouped papules, deep ulcerations, and the like. This seems to indicate that the mother has been syphilitic for some time, and that the earlier

affections have been overlooked or have been latent. This view is also corroborated by the experience of every day, which shows that a mother who has given birth to a syphilitic child is not infected by nursing it, even if she has no symptoms of syphilis, and is not known to have had any; whilst another woman without syphilis, as a rule, will not escape infection by nursing it. If men marry whilst they present symptoms of syphilis, the result is generally that they infect their wives and beget syphilitic children. The same happens often if they marry a short time after the disappearance of manifest symptoms. On the other hand, syphilis is rarely communicated to the wife or to the children if the husband has been entirely free from symptoms say for two years. This experience corroborates the view that the husband's role in regard to inherited syphilis is merely to infect the wife; whilst she, by localizations in the womb, or in other unknown ways, may continue to be the cause of infection in the children. The symptoms of inherited syphilis may be found at birth, but they appear commonly between the second and the twelfth week. They have always the character of later eruptions. Generally the efflorescences are grouped (secondary forms), but gummatous growths (tertiary forms) may be found even a few weeks after birth. Syphilis appeared in almost one-half of the cases within the first month, in three-quarters within the end of the second, and in nine-tenths within the end of the third month.

Mucous patches are a very important diagnostic sign. They are never well developed in inherited syphilis, whilst they are one of the most common signs of acquired syphilis in children. Likewise the lymphatic glands are generally not swollen in inherited syphilis, whilst in children with acquired syphilis the swelling is commonly very marked. Children who are born with syphilis die generally within a week; of those in whom it appears several weeks after birth, some are cured. Of 243 treated in the hospital, 137 or 56.4 per cent. died. Acquired syphilis in children almost never causes death. So-called *tardive* syphilis, tertiary symptoms appearing at the second dentition or at puberty, is probably a new eruption in individuals who have had inherited syphilis in infancy.

Against the antimercerialists, who pretend that destructive forms are due either to the combined mercurial and syphilitic dyscrasia, or to syphilis in a body ruined by syphilis, the author contends that *the worst syphilitic affections may be found in individuals who have never taken mercury*. Of 7424 individuals with constitutional syphilis treated from 1864 to 1876 in the hospital, 493 had grave and destructive symptoms without having undergone any mercurial treatment. As the destructive symptoms generally first appear later, he has separated those suffering from repeated eruptions, of which there were 1561. Of these 263 or 16.7 per cent. had grave affections without having taken mercury.

In *gonorrhœa* he advocates injections. He thinks that it prevents the formation of stricture, since the latter affection seems to be much rarer now, when the physician tries to shorten the course of the inflammation as much as possible by injections than formerly, when, in compliance with the doctrine of the humoral pathology, he was afraid to stop the gonorrhœa. He denies that it gives rise to epididymitis, which occurs rarely under the use of injections, and which, when it appears, is not at all rendered worse by continuing them. He denies also that they give cystitis unless an uncommonly large syringe be used, or several small ones in succession. If the discharge is purulent, he uses at once an injection of nitrate of silver (ten grains to the ounce). After that the patient injects, four times a day, sulphate of zinc (a scruple to eight ounces).

The last chapter treats of the *means of preventing the spread of venereal diseases*. In this are found all the regulations and laws concerning the subject in Denmark. Most important of all measures are regular examinations of prostitutes

They are practised twice a week in Copenhagen. The immense benefit derived for the public from them is shown statistically by comparing the result of the examinations in those who are under regular control, and in other women who are not under control, but are occasionally arrested by the police on suspicion of prostitution. In the latter class venereal affections were found more than ten times as frequently as in the former. As Dr. Engelsted read this last chapter before the International Medical Congress at Philadelphia, it may be found in the recently-published transactions of that body.

H. J. G.

ART. XXX.—*Cyclopadia of the Practice of Medicine*. Edited by Dr. H. VON ZIEMSEN, Professor of Clinical Medicine in Munich, Bavaria. Vol. XVI. *Diseases of the Locomotive Apparatus, and General Anomalies of Nutrition*. By Prof. H. SENATOR, of Berlin; Prof. E. SEITZ, of Giessen; Prof. H. IMMERMANN, of Basel; and Dr. BURCH-HIRSCHFELD, of Dresden. ALBERT H. BUCK, M.D., of New York, editor of American edition. 8vo. pp. xii. 1060. New York: William Wood & Co., 1877.

THE appearance of a sixteenth volume of this important work shows that the editor has been obliged to abandon the intention, announced in the prospectus, of issuing it in fifteen volumes, it having already outgrown the proportions originally marked out for it. No doubt this change has been rendered necessary by the diffuseness of some of the gentlemen who have been engaged to write the various articles for it, some of which are certainly treated of at greater length than their importance would seem to demand. For instance in the present volume, Immermann devotes over 130 pages to the discussion of corpulence, a condition troublesome enough, it is true, if it be excessive, but one for which the physician is rarely called upon to prescribe. His articles on Anæmia and Chlorosis are also long, together occupying 320 pages. On the other hand, Senator's articles on the Diseases of the Locomotive Apparatus, which seem to us sufficiently full and elaborate, and which include descriptions of the different varieties of rheumatism, gout, rheumatoid arthritis, rickets, and malacosteon or mollities ossium, do not take up much more space than that, which, as we have already said, is assigned to corpulence.

Senator in his article on Acute Rheumatism, when speaking of the pathogeny of the disease, alludes to a theory with which many of our readers are probably unacquainted. It appears to have been originally advanced by Pfeufer, but has been especially advocated by Hueter. In the opinion of these gentlemen, endocarditis so far from being a complication of rheumatism, is really to be regarded as the cause of the joint affection, which they believe results from embolism by particles of extreme minuteness washed off from the endocardium of the left ventricle. They contend that endocarditis may be present without giving rise either to subjective or objective symptoms, and that, therefore, it may be assumed to exist even in those cases of rheumatism which appear to run their course without cardiac complication. Even if we were to grant that endocarditis may exist without giving indications of its presence, and that it not only occurs in every case, but precedes the joint affection, it is impossible to understand why these minute emboli should be impacted only in the vessels of the synovial membranes, and never, or hardly ever, in those organs which are primarily, and most frequently exposed to the chances of embolism in other forms of endocarditis, viz., the spleen, kidneys, brain, retina, bowel, etc. But unless we are to attach less

importance to the physical signs of disease than we have hitherto done, it is inconceivable that in a disease like rheumatism, in which the præcordial region is constantly examined, endocarditis can often run its course without being detected. The theory, therefore, seems to us to have been built upon a very slight foundation, and not to explain the phenomena of rheumatism any more satisfactorily than a similar theory does those of chorea.

The author believes that the chilling of the surface which generally precedes an attack, acts as an irritant upon a variable number of peripheral expansions of centripetal nerve-fibres, through which the irritation is conveyed to the vasomotor and trophic nerve-centres, exciting them to abnormal activity. This hypothesis, he says, agrees with the shifting character of the disorder, and the possibility of an irritation in the central organs of the nervous system being suddenly propagated to the central origin of nerves supplying the more diverse tracts, is supported by analogy. In other words, rheumatism may have a spinal origin, a theory which was foreshadowed in the pages of this Journal as long ago as 1831 (see vol. viii. and xii.), by the late Professor J. K. Mitchell. This theory, however, makes no attempt to define the nature of the irritation set up by chill, and the author endeavours to supply this deficiency by supposing that it consists in the abnormal development of an acid. During exercise, he says, a formation of acids and acid-salts, of lactic acid and acid potassium phosphates, takes place, and it is to the accumulation of these products that muscular fatigue is due. Under ordinary circumstances, these products are eliminated, but should the cutaneous surface be chilled, their elimination will be checked, and they will necessarily accumulate in the system until they can be otherwise excreted or decomposed. The chill, he says, generally acts injuriously on the body when it is heated and tired by exertion, and hence the joints are especially prone to become the seat of the disease, because, next to the muscles that move them, they are the most functionally active parts. The author attaches very little importance to the fact that injections of lactic acids have given only negative results, because the animals chosen for these experiments, such as cats, dogs, and rabbits, are either wholly insusceptible, or very little susceptible to the disease. Moreover, true perspiration cannot take place in these animals, for they are destitute of sweat glands. Experiments of this sort could only have been expected to succeed if they had been conducted on animals such as the horse, which are naturally liable to rheumatism, and which resemble the human subject in perspiring.

Holding these views in regard to the nature of rheumatism, it is not surprising that the author should place more reliance upon the alkaline than upon any other plan of treatment. The alkalies are to be given in large quantities until the urine has become alkaline, and the violence of the disease has been checked. He prefers the sodic salts to those of potassium, ammonium, and magnesia, and condemns the practice of wrapping the inflamed joints in cotton-wool, which, he says, tends to aggravate the feeling of heat and other inflammatory symptoms, and recommends in its stead the application of ice-bags, holding that the fear of causing disease of internal organs by vigorous attempts to reduce the local inflammation, is without foundation. This fear may be exaggerated, but our own experience leads us to believe that patients derive no harm, and frequently a good deal of comfort from enveloping the joints in wool or cotton.

Among the remedies for the relief of pain, he mentions one which we do not recollect ever to have seen recommended elsewhere. Injections of carbolic acid (one Pravaz syringe filled with a one per cent. watery solution), under the skin covering the affected joints, are, he says, at once convenient and safe. A less decided effect is produced by painting the joint with carbolic acid (one part of the acid in fifteen of linseed oil).

In a note at the end of the volume, Dr. Senator's translator, Dr. E. Buchanan Baxter, calls attention to the merits of salicylic acid with its salts and salicin, the active principle of willow bark. The latter substance, when acted upon by ferments, such as ptyalin or emulsin, splits up into saligenin and glucose, saligenin being readily oxidizable into salicylic acid. Senator, to show that this change takes place in the human body, relates the following experiment: He swallowed thirty grains of salicin in powder; in from fifteen to twenty minutes later his urine gave a violet reaction with ferric chloride, showing that it already contained salicylic or salicyluric acid. The action of salicylic acid and that of salicin in rheumatism may therefore be assumed to be the same. As the importance of these remedies in the treatment of rheumatism has already been frequently alluded to in the pages of this Journal, it is only necessary to add that Senator has recently recommended that they should be given conjointly.

Senator explains the presence of uric acid in the blood, in gout, in the following way: "There is," he says, "much reason to believe that the spleen is, if not the only, yet a very important source of uric acid. We see this in splenic leukaemia, and in other instances brought forward by H. Ranke. The spleen, as a whole, and especially its constituent follicles, are liable to enlargement of a physiological kind also, viz., some hours after food, at a time when the products of gastrointestinal digestion are being absorbed. We find a corresponding increase in the amount of uric acid eliminated several hours after a meal. An abundant meal thus operates in a twofold manner to increase the production of uric acid: on the one hand, by furnishing the system with more materials for its formation; on the other, by exerting a specific influence on the functional activity of the spleen. He believes, however, that in addition to an increased formation of uric acid in gout, the blood has also become less capable of dissolving it, in consequence of an increase in the proportion of acid and of acid salts. Senator is also the writer of the articles on Diabetes Mellitus and Diabetes Insipidus.

The remaining papers in the volume, with the exception of those on "Slight Disorders caused by Catching Cold," and "Scrofulosis and Affections of the Lymphatic Glands in general," which are respectively by Prof. Seitz and Birch-Hirschfeld, are contributed by Immermann, who has written on anaemia, chlorosis, progressive pernicious anaemia, and corpulence. In his paper on the first of these diseases, Immermann, in describing anæmic murmurs, says, that besides being always systolic in rhythm, they correspond as regards their point of maximum intensity, precisely to those murmurs which are due to insufficiency of the auriculo-ventricular valves. This statement is so utterly at variance with the teachings of Walshe, Flint, and other authorities in physical diagnosis, that we should have supposed it to be a typographical error, as it is unsupported by argument, were it not that he gives, a little further on, the following explanation of the production of anæmic murmurs: Owing, he says, to the altered state of the blood, the muscular tissue of the heart is easily fatigued, and this liability to premature fatigue extends to the papillary muscles connected with the auriculo-ventricular valves. After any undue exertion on the part of the cardiac muscle, a temporary paresis of the *musculi papillares* ensues. In consequence of this the valve-flaps intrude into the auricles with every ventricular contraction; *i. e.*, a transient functional insufficiency of the mitral and tricuspid valves is established, and gives rise to a systolic murmur in the corresponding orifices. It is possible that Walshe's assertion that the anæmic murmur is audible only in exceptional cases below the nipple, and that it is never perceptible as far as the left apex, is too exclusive, since other observers state that it is occasionally heard over the body of the heart. Our own experience leads us to believe that the anæmic murmur is most frequently heard to the left of the sternum, over the upper part of the

body of the heart, and that although invariably more intense towards the base of the heart, it may sometimes be heard at the apex. In a case recently under our care, a loud systolic murmur was perceptible at the apex as well as at the base, as long as the symptoms of anæmia were present, but ceased to be audible when these had yielded to treatment. When speaking of the auscultation of the veins, the author cautions us against a source of fallacy which he says consists in the forced rotation of the head to the opposite side, since the jugular vein is then compressed, about its middle, by the tense cervical fascia and the belly of the omo-hyoid. Now it is rather singular that Barth and Roger insist, in their *Manual of Auscultation and Percussion*, upon the necessity of this rotation of the head in many cases, in order to bring out the murmur, and that Prof. Flint lays great stress also upon its importance.

The article on Progressive Pernicious Anæmia, although full in other respects, does not contain any reference to the fact that this disease was fully recognized and described by Dr. Thomas Addison, in his paper on the Constitutional and Local Effects of Disease of the Supra-renal Capsules, under the name of Idiopathic Anæmia, and that it was subsequently described in the *Guy's Hospital Reports* (3d series, vols. iii. and v.), by Dr. Samuel Wilks, who at first gave to it the name of idiopathic fatty degeneration, but subsequently adopted that suggested for it by Dr. Addison.

As we have already said, the physician is not often called upon to treat corpulence, and yet it is a condition which is occasionally the cause of great discomfort to those who are afflicted with it, and its presence in a high degree not only modifies the treatment, but unfavourably affects the prognosis of many diseases. It is, therefore, a subject not without interest for the practitioners of medicine, who will find in Immermann's article much valuable information. Cases having fallen under our observation in which an attempt to reduce corpulence by the use of a restricted diet, or, in other words, by the so-called Banting method, has been followed by impairment of health, we naturally turned to see whether or not Immermann approved of this treatment, and found the following:—

"Quite in harmony," he says, "with what we have just said, is what has been observed in a great many cases, in which, in order to guard against corpulence, the consumption of fats, hydrocarbons, etc., has been reduced to a minimum, and the body nourished almost exclusively upon albumen. Here, sooner or later, a loss of the normal feeling of strength, a very uncomfortable and tormenting sensation of languor and weakness has supervened, and, for good or evil, compelled a discontinuance of the prophylactic treatment. A second danger, and one scarcely less worthy of attention, depends on the incapacity of the digestive organs continuously to digest a sufficient quantity of albumen to meet all organic requirements."

The author also thinks that a diet consisting solely of albuminous articles, by its tendency to the production of an increased amount of uric acid, may lead to the occurrence of attacks of gout. He therefore concludes that—

"Even with a well-marked case of corpulence, the supply of gluteins, hydrocarbons, and even fats, must never be so curtailed as to produce a considerable diminution of the natural feeling of strength and of the functional capacity of the body, and further, the supply of albumen must never be so great that disorders of digestion or signs of the lithic acid diathesis are produced."

The volume is, we think, well worthy to take its place alongside of its fellows of this valuable series.

J. H. H.

ART. XXXI.—*The Toner Lectures Instituted to Encourage the Discovery of New Truths for the Advancement of Medicine. Lecture V. On the Surgical Complications and Sequels of the Continued Fevers.* By WILLIAM W. KEEN, M.D., of Philadelphia. Delivered February 17, 1876. Washington: Smithsonian Institution. April, 1877.

THAT typhoid fever is sometimes followed by affections of external parts, especially of bones and joints, has long been known, and is a fact familiar to all. But that the continued fevers (typhus and typhoid) have so many and grave surgical complications and sequelæ as are treated of in this lecture, will certainly be a matter of surprise to the majority of readers. Dr. Keen, omitting all reference to erysipelas, venous thrombosis, hemorrhages, bed-sores, abscesses, and affections of the eye, has considered at length "diseases of the joints, the bones, and the larynx, gangrene, hæmatomata, and parotitis."

Of the joint inflammations that involving only a single articulation is rightly declared the form that will most interest us. Not often met with; in a large proportion of cases located in the hip; generally terminating favourably; occasionally causing ankylosis; it not seldom produces spontaneous dislocation, generally noticed after the third week, easily reduced when detected early, and always to be watched for, especially in children. Effusion existing, "the position of the leg becomes of the greatest possible importance;" and the limb should be "kept in abduction and external rotation." It may be mentioned in this connection that I have now under observation a case of this post-typhoid monarticular inflammation in a child nine years old, in which it is the first phalangeal articulation of the left middle finger that is affected.

For the bone-inflammation two causes are assigned: "first, thrombosis, or in some cases possibly embolism; and secondly, absolute inanition or want of nutrition." "Scarcely any region of the body escapes;" the disease appears sometimes early, sometimes late; and "wide-spread mischief may follow in the osseous system, when put to the test by labour, months and even years after such a fever."

Of diseases of the larynx 169 cases have been collected, "of which at least 67 (and possibly many more) certainly involved the cartilages themselves." "Pathologically, the troubles may be grouped into three varieties, viz.: 1. Œdematous laryngitis. 2. Ulcerative laryngitis. 3. Laryngeal perichondritis." These diseases "are exceedingly rare in children;" occur in men three and a half times as frequently as in women; and are developed generally "in the later fever, or more frequently in distinct convalescence." That the prognosis is grave is shown by the fact that of "146 cases of all kinds of stenosis in which the result is recorded, 101 died," *i. e.*, over 69 per cent.; and of 56 cases in which there was cartilage-necrosis, 54 terminated fatally. "The seat of the necrosis in the majority of the cases is the cricoid, next the arytenoid cartilages." "The earliest symptom of grave laryngeal disease is usually an altered voice," the hoarseness being soon followed by dyspnoea. "Pain and tenderness, though often masked by the mental condition, are generally present, especially in perichondritis; . . . dysphagia is especially present in cricoid and arytenoid necrosis; . . . rarely is there any external swelling." Treatment, and particularly operative treatment, is shown by statistics to have a decided influence in lessening the great mortality attending these laryngeal affections; markedly so when perichondritis is established, as under such circumstances "death is almost unavoidable if no operation be done." "Unless necessary, it is best not to operate during a paroxysm." Sometimes the canula can be removed early, but in a large proportion of cases the laryngeal ob-

struction is permanent, and the tube consequently cannot, with safety, be dispensed with. In the only case of this laryngeal affection that has come under our care, in which we made tracheotomy because of oedema, the man, during the subsequent two years that he lived, was never able to be without the tube for more than a few minutes at a time, the stenosis of the larynx being almost complete.

Of the two classes of cases of gangrene, those dependent upon pressure and those arising spontaneously, special attention is called to the latter. Ordinarily infrequent, they are occasionally met with in large numbers, as by Estlander, in Finland, in 1865-7. "As far as the pathology of the cases is concerned, they may be divided into two classes: 1, those with a discoverable clot; and, 2, those without such a clot."

The cause of the clots, it is held, is not the condition of the bloodvessels, but is threefold: "1, the altered blood; 2, the weakened heart; and, 3, the mechanical difficulties in carrying on the circulation, especially in distant parts." Even in the cases in which no clots of any considerable size can be found, the author believes that coagulation is still the cause of the gangrene, which "begins as a blood-stasis in the capillary circulation." "The results vary much according to situation and extent. In the extremities, if life be saved, the result is usually an amputation, either by nature or by the surgeon."

The blood extravasations following typhoid fever, and consequent upon rupture of muscles that have become extremely fragile, may be either ecchymoses, diffuse infiltrations, or distinct hæmatomata; these latter being particularly likely to be found, "in the recti abdominis and the adductors of the thigh." The size of the tumours "varies from that of a bean to that of an orange." Their symptoms are often very slight, but if suspected to exist they may usually be detected without great difficulty. They should be treated by incision, or, perhaps as suggested, by aspiration.

Parotitis is declared to be "occasionally an exceedingly important surgical complication, whose onset is always to be dreaded, lest it bring in other evils worse than itself;" among which evils are sloughing of the gland, venous thrombosis, necrosis, septicæmia, facial paralysis and deformity, and ankylosis of the jaw. The mortality of cases presenting this complication is shown to be much above the average, being over 30 per cent.

As the result of his investigations Dr. Keen, in conclusion, points out that typhoid is much more likely than typhus to be followed by surgical complications and sequelæ; that these latter are most common in the earlier years of maturity; are much more frequent in men than in women; are especially located upon the lower half of the body; are in general to be recognized without much difficulty; and are largely due to mechanical causes "working in conjunction with the profoundly vitiated blood." "Their prognosis is naturally unfavourable yet not to the extent we would suppose from the addition or sequence of such serious disease;" and their "treatment must be bold but not rash, conservative but not timid."

Appended to the lecture is a very extensive bibliography, for assistance in the preparation of which indebtedness to Drs. Toner and Billings is expressed. It is certainly a matter of great gratification to all the profession of our country that there are now in Washington very complete libraries to which ready access can be had, and which can with little difficulty be drawn upon at any time.

This brief glance at some of the more salient points of Dr. Keen's lecture cannot be closed without an expression of the pleasure had in its perusal. If it does not report "the discovery of new truths for the advancement of science," it does, what is of perhaps equal importance, viz., call attention to the nature and gravity of diseases that have been met with, but the notices of which are scattered here and there through a large number of books and journals, and consequently difficult to be found and likely to be overlooked.

P. S. C.

ART. XXXII.—*The Cure of Rupture, Reducible and Irreducible, also of Varicoch and Hydroch, by new methods.* By GEORGE HEATON, M.D. Arranged by J. H. DAVENPORT, M.D. 12mo. pp. 196. Boston: H. O. Houghton & Co., 1877.

THIS little volume contains 196 pages of instructive matter. It advocates a simple method of treating every variety of rupture. It maintains that a radical cure can be accomplished by strengthening the fibrous tissues, "which are nature's chief bulwark against hernia."

A "method of tendinous irritation" is carried out by injecting about ten minims of the fluid extract of *quercus alba* into the fibrous borders of the rings and canal through which the hernia protrudes, with an instrument similar to the hypodermic syringe. By thus irritating the part, plastic lymph is deposited in and around the tissue, and thus a wall is made and remains, which prevents the hernia.

After the operation, dull pain about the part is felt for several hours, and some tenderness exists for several days. A pad and bandage are applied immediately after the operation, and worn for two months or more. The sac, as well as its contents, are to be returned, if possible, into the abdomen before the injection is made. The sac, when it cannot be returned, will be contracted by the effects produced by the injection. By means of simple taxis, patiently persevered in, Dr. Heaton has succeeded in reducing hernie which had apparently been irreducible for ten or twenty years or more. When the hernia cannot be reduced, cutting into the sac and dissecting away the adhesion and returning the parts into the abdomen is recommended, and considered as safe, trustworthy, and efficient, and no more to be dreaded than any other surgical operation of moderate importance.

The author very properly condemns the careless, not to say criminal, manner in which some surgeons send a patient to have a truss applied by a surgical instrument maker, whose acts in the case are entirely empirical.

The operation of Gerdy, Wüsten, Wood, and others, consisting of invagination, is now generally laid aside by surgeons, as not possessing the merit claimed formerly, the invaginated material operating as a foreign body is often gotten rid of by nature, thus allowing the recurrence of the hernia.

That the fibrous tissue around a hernial opening may be strengthened by the deposit of coagulable lymph, is well shown by the fact that in cases of recent hernie which have been reduced at once, and the parts properly treated, no recurrence of the hernia has taken place, though the patients have been subjected afterwards to a greater strain than before the hernia took place. And again, in cases of old hernie, when from a sudden exciting cause, laceration of the margins of the hernial opening has taken place, the parts have been closed effectually by the deposit of coagulable lymph, and thus all protrusion prevented.

In the autumn of 1875, the writer of this review had such a case in the person of an old gentleman 64 years of age, the subject of an old reducible inguinal hernia for fifteen years. He jumped from a street railroad car which was in motion, immediately he felt something give way under the pad of his truss. The pain was considerable, and the neck of his hernial tumour, on removing the truss, was much enlarged. The mass was returned, the parts supported by a bandage, and rest maintained by opium was directed. He entirely recovered, and now wears no truss. The parts, the fibrous tissues, were strengthened by the coagulable lymph thrown out from the margin of the lacerated opening. Doctor Heaton's treatment is well worthy of being tried when a radical cure is endeavoured to be attained.

In regard to the cure of hydrocele by the introduction of red precipitate, we feel compelled to hesitate before recommending it. With the tincture of iodine in this affection, unlike invagination for hernia, we have been uniformly successful during an extensive experience with it. Red precipitate does and will salivate.

The book is handsomely gotten up, and is in every way a very readable one.

W. S. F.

ART. XXXIII.—*On Hare-lip and Cleft Palate*. By FRANCIS MASON, F.R.C.S., Surgeon and Lecturer on Anatomy at St. Thomas's Hospital, etc. With sixty-six illustrations. 8vo. pp. viii. 131. London: J. & A. Churchill. 1877.

RARELY indeed can any medical book be read with greater comfort than this. Heavy paper, large type, wide margins, clear, illustrative, and numerous woodcuts, all combine to lighten the labour, while the very excellent character of the matter arouses and keeps alive the interest for the hour or two its reading demands. The two essays on kindred subjects appeared in St. Thomas's Hospital Reports for 1875-6, and are appropriately dedicated in the present form to the memory of the late Sir William Fergusson as the memento of a long friendship. Not much that is really new will be found in the book, but as a *résumé* of our existing knowledge and as a record of the opinions of one whose practical experience lends weight to these opinions, it is a most excellent book. He who can combine the suggestions of many minds as to any given topic and so formulate the practical conclusions drawn from them as to interest and instruct always does a good service to the cause of truth, and this service Mr. Mason may fairly claim as his own.

He points out the fact that in most cases of hare-lip involving the jaw there is an absence of one or both lateral incisors, *i. e.*, the internaxillary bone does not then possess all four of the incisor teeth. He gives several instances of maternal impressions which were alleged to be the cause of the deformity, but does not place much reliance on the statement. Not only is it occasionally hereditary as in Demarquay's instance of eleven cases in three generations, but, as Fergusson first pointed out, a partial but similar defect is generally found in one or both of the parents. Very properly and in accordance with almost all later teaching, he advocates an early operation, and in those cases in which nutrition will be impaired by delay, the earliest practicable operation. Not only do they suck better, but a wide cleft palate, if it exist, may be so narrowed that the edges in time may almost touch. All the ingenious and singularly varied operations are then detailed. In describing the ordinary operation he gives the excellent advice to beware of removing too thin a piece from the margins of the fissure, since this is a cause of the V-shaped lip so frequently left on the lip.

Although staphylorraphy was done in this country by Warren as early as 1820, and by a few others at an earlier date, yet the real success of the operation is a matter of the last twenty years. Unless there be good reason for doing the operation earlier (not unfrequently both advisable and successful), he thinks that generally it should not be undertaken before the age of five or six years, especially on account of the thinness of the tissues. The use of nitric acid in some cases gives good results, but he prefers in general the knife with subsequent division of the palate muscles, in describing which procedure he gives due credit to Panceast, Mütter, and Warren. Warren's brilliant success in closing cleft of the hard palate by uraniscoplasty, and Langenbeck's operation by muco-periosteal flaps (an opera-

tion really done eight years before, in 1852, by Mr. Avery), and Dieffenbach's operation by osteoplasty with their various later modifications, are all minutely and clearly described. The muco-periosteal flaps if they do not give a bony roof, which is very doubtful, do give so firm a roof as to be practically as useful, and is not followed by any exfoliation of bone as in osteoplasty. Hence as a rule he gives this decidedly the preference. Where both the hard and the soft palate are involved he rather leans to a complete operation at once, though most authors prefer to close only the hard palate at the first operation. To meet the emergencies of nursing in cleft of the hard palate, he has devised an ingenious nipple with an artificial roof attached to it.

W. W. K.

ART. XXXIV.—*Circular Orders No. 3, War Department, Surgeon-General's Office, August 20, 1877. Report on Lister's System of Wound Treatment.* By Assistant-Surgeon ALFRED C. GIRARD, U. S. A. pp. 12.

WHILE travelling in Germany and England, Dr. Girard used his opportunities for professional observation to most excellent purpose, and has placed not only the medical corps of the army, but the entire medical profession, under deep obligations by this modest yet thoroughly useful report. Within twenty minutes' reading he has given the most complete *résumé* of the application of the antiseptic system of surgery that we are acquainted with. Were it possible, we should like to see his brief pamphlet reprinted in our leading medical journals, and spread broadcast throughout the profession, that no one might be without the opportunity of testing its advantages.

His paper is divided into two parts: in the first he relates the manner in which he was convinced of the advantages of the system; and in the second he gives a brief but complete description of the materials used, their mode of preparation from the simple means readily found by every one, and the details of their application. Somewhat of a sceptic at first by his relations with the opponents of the system, he was forced into its support by seeing accumulating evidences of its value in travelling from one Lister hospital to another: some of them hospitals used for centuries, and hot-beds of infection, in which nearly every case was sure to be followed by grave accidents, and every method had failed, till the use of Lister's method, with *all* its precautions, had banished them. Nussbaum, for instance, who had lost even eighty per cent. of his patients from pyæmia, has seen it absolutely disappear. No one has stated the possibilities of the method more clearly, and we believe more truthfully, than the author in the following:—

“Who, before this, would have fearlessly opened the knee-joint for suppurative arthritis, as I saw done under the spray, the patient recovering in a few days with a sound joint? Who would have expected an ovariectomy, with general adhesions, in a woman of seventy-five, to heal in eight days without a symptom of reaction, or a laparotomy for the liberation of incarcerated peritoneal hernia in a moribund patient healing in six days, or a resection of the ulna in nine days? I observed several hip-joint resections recovering in the most favourable manner, numbers of compound fractures of the extremities knitting under Lister's dressing like simple ones; even comminuted ones, which formerly would have induced renewal of the limb, united without an unfavourable symptom. Cancers which had been removed with great loss of substance united by first intention; other tumours were extirpated, and the operation caused no more inconvenience than a simple incision. The smell of putrefaction was banished from wards where scores of patients were lying with grave injuries and severe wounds.”

Surely before what he well calls such “remarkable clinical results attained by Lister and his followers,” it is imperatively demanded that the system, which

has been so supinely observed only in this country, should be actively and energetically put to the crucial test of experience. We rejoice that Mr. Lister has gone to London. He has accepted the gage of battle. If his method is worthless, he cannot fail to be attacked and vanquished; but if it be a genuine and important improvement, he will win a Waterloo.

Any one who wishes to test the system will find himself well informed as to materials and methods by the second and larger part of the paper, and very properly the author insists on the necessity for attention to all the seemingly minute and troublesome details, without which only failure may be expected.

W. W. K.

ART. XXXV.—*Illustrations of Clinical Surgery.* By JONATHAN HUTCHINSON, F.R.C.S., etc. *Fasciculus VII.* Folio. pp. 143-172. Philadelphia: Lindsay & Blakiston, 1877.

THE attention of the readers of the Journal is again invited to the very handsome work of Mr. Hutchinson. Those who are not familiar with the work by personal acquaintance have been made aware, from time to time in these pages, of its value as a series of surgical portraits. The present fasciculus, No. VII., only contains two plates, illustrating acne in xanthelasmic positions, and true xanthelasma palpebrarum.

This affection, first described as viteligoidea plana, would seem to have some connection with sick headache, it at least occupies those inner portions of the eyelids which are so commonly the seat of pigmentation during an attack of headache or biliousness, and is much more common in women than men. In a large proportion of the cases observed and collected by Mr. Hutchinson, the sufferers from this affection had been also sufferers from sick headaches. The yellow spots resembling a bit of chamois leather let into the skin, make their appearance in middle and advancing life, and beyond their unsightliness cause but little annoyance. Treatment is of but little avail. This affection is complicated sometimes with acne, sometimes with minute cysts, and in some cases the leather-like patches are somewhat elevated above the surface of the skin, while at others they are perfectly level with it.

Mr. Hutchinson gives a more generous amount of letter press in this fasciculus than usual, and the contained table of seventy-four cases gives value to it. The plates themselves are beautiful illustrations of chromo-lithography. While the general surgeon will find this number less interesting than some of those which have preceded it, he can hardly fail to agree with us that it forms a suggestive part of a beautiful and valuable work—one which must add lustre to the name of its author and prove of much service to the profession.

S. A.

ART. XXXVI.—*Lectures on Fevers.* By ALFRED L. LOOMIS, A.M., M.D., Professor of Pathology and Practical Medicine in the Medical Department of the University of the City of New York. 8vo. pp. xii., 403. New York: William Wood & Co., 1877.

THESE Lectures on Fevers, like those on Diseases of the Lungs, Heart, and Kidneys, by the same author, which were published about two years ago, were

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delivered in the Medical Department of the University of the City of New York, and constitute part of Dr. Loomis's regular course on the Practice of Medicine. In the notice of the first series, which appeared in the July number of this Journal for 1875, we expressed the opinion that it was not marked by any striking originality, and after a careful examination of the volume before us, we find it impossible to come to any other conclusion in regard to its contents. These lectures are probably as good as those delivered in many of the leading colleges of the United States, but they are certainly no better than some we have listened to, whose authors have never yet thought it wise to publish them. We look in vain throughout the book for new views of pathology, and for new methods of treatment. As part of a course crowded into a few months, they would not specially invite criticism, but the author has no right to complain if they are condemned as elementary and commonplace, when he seeks to extend the influence of his teaching by issuing them in book form.

The author divides fevers into three classes, as follow: 1st. Contagious; 2d. Malarial; 3d. Miasmatic contagious. The first class includes typhus, relapsing, scarlet, and miliary fevers, smallpox, and measles; the second, the different varieties of malarial fevers, together with dengue, and typho-malarial fever; and the third, typhoid and yellow fevers. The existence of miliary fever as a distinct disease has been denied by most good observers, but Dr. Loomis, although he does not positively say that he has ever himself met with a case, thinks that it is entitled to recognition. He therefore describes the symptoms which are usually ascribed to this disease. If it really occurs as an epidemic, as he says it does, in certain parts of Belgium, France, England, Germany, and Italy, attacking from one-tenth to one-fifth of the whole population in the districts where it prevails, it seems to us that it would have secured for itself an undisputed place in the list of diseases.

Seven lectures out of the thirty are devoted to the consideration of typhoid fever, which, the author says, although not strictly a contagious disease, never is of spontaneous origin. In other words, he ranges himself with those who believe that the emanations of sewers or privies will not produce typhoid fever unless they are contaminated by the discharges of a person suffering from the disease. In this opinion he is opposed to Murchison, who, in his work on Fevers, has adduced many instances where the disease could be traced to no other cause than defective drainage. This is, however, still an open question which we must wait for further observation to settle.

The author gives only a qualified approval to the use of the cold bath in the treatment of typhoid fever, saying that it should never be used after the second week of the disease, and that, if you do not succeed in maintaining a low range of temperature after four or five baths have been given, you will gain nothing by pushing this plan of treatment further. We believe ourselves that the cold pack or sponging with cold water, although unquestionably less efficacious in reducing the temperature of the body, is, in many cases, a safer means of applying cold, as it involves less disturbance of the patient. He regards quinia as a valuable adjunct to the cold bath in the treatment of this disease, believing that if it is given directly after the patient returns to his bed, it will generally delay the recurring rise of temperature. He recommends that as much as from thirty to forty grains should be given in the course of two hours, a dose which he also occasionally prescribes, it may be remembered, in pneumonia, and which, while it undoubtedly often accomplishes the purpose for which it is given, will sometimes provoke nausea and vomiting. During the third or fourth week of the disease, if the temperature continues high, he is accustomed to add digitalis to the quinia, as he has found it, when given in this combination, to possess decided antipyretic

powers. The doses in which he prescribes it, from ten to twenty grains of the powder daily, strike us as being unnecessarily large, and as its use in such quantities is not unattended by danger, we are rather surprised that he has left his recommendation unaccompanied with a caution.

Of the remaining lectures in the volume, two are devoted to yellow fever, eight to malarial fevers, four to typhus fevers, one to relapsing fever, and the rest to the exanthemata.

J. H. H.

ART. XXXVII.—*A Guide to Therapeutics and Materia Medica.* By ROBERT FARQUHARSON, M.D. Edin., Lecturer on Materia Medica, at St. Mary's Hospital Medical School. Enlarged and Adapted to the U. S. Pharmacopœia, by FRANK WOODBURY, M.D. Philadelphia: Henry C. Lea, 1877.

THIS book, designed, as stated in the preface, to supply the wants of the student and junior practitioner, contains 410 duodecimo pages, and is an effort to present in a compact form the leading facts of materia medica, experimental and practical therapeutics, and toxicology: the original English work, which would appear to be little more than an outline of the physiological action of medicines together with the therapeutical indications deducible therefrom, having been both altered, so as to conform with the U. S. Pharmacopœia, and greatly enlarged by the editor.

The introductory chapter is devoted to a general, and in the main correct, description of the methods of prescribing and administering drugs. There are, however, several points to which exception may be taken: for example, in the paragraph on "Prescribing for Children" the statement is made that at the age of *five* or *six* years dilute prussic acid may be given in doses of ℥j-ij, and that, in a child of the same age, excellent results have followed the administration of ℥j of "tinct. ferri" ter die. The first dose is certainly excessive, and the case must be rare in which the second could be given with safety: again, in giving the proportional doses for children, the dose at the age of five years is set down as " $\frac{6}{5} \times \frac{1}{6} = \frac{1}{5}$ "!

The subject matter of the book is divided into three sections, and in the case of the more important drugs, the text is divided into two parallel columns, containing their physiological and therapeutical actions, and the idea of drawing therapeutical indications directly from physiological action is a good one.

In the *first* section, entitled "Remarks on Certain Classes of Remedies," we find that, with the exception of diuretics, emetics, expectorants, and purgatives, the classes considered are of little importance, no mention whatever being made of such prominent therapeutical groups as alteratives, anæsthetics, astringents, cardiac stimulants and sedatives, excito- and depresso-motors, mydriatics, and tonics.

The *second* section, which forms the bulk of the volume, is given to the consideration of the "Remedies comprised in the Primary List of the U. S. Pharmacopœia." The different medicines are for the most part enumerated alphabetically, an arrangement which is undoubtedly the best for works intended for reference. The materia medica proper is restricted to an enumeration of the officinal names of the drugs, with their preparations and doses, and with occasionally a few words of description. We regret to notice mistakes as to the strength of some of the preparations, and that sufficient care in a few cases has not been observed in stating doses: for instance, the dose of tr. benzoini comp. when mentioned among the preparations of aloes is given as ℞-xxx, when

among those of benzoinum, f5j-ij; the dose of tinctura humuli and of tinctura lupulinae is f5ss-ij; acidum carbolium, which is described solely as a solid, is given in doses of gtt. i-ij, and glyceritum acid. carbol. in doses of Mx-xl, equivalent to double the quantity of carbolic acid advised.

The *third* section includes a number of drugs which, although in frequent use, are either not official or belong to the secondary list U. S. P. The most important of these are acidum salicylicum, eucalyptus globulus, and jaborandi.

After the descriptions of many of the drugs prescriptions are introduced to illustrate the art of prescribing, which are neither models of correct writing nor of grammatical accuracy. The author has forgotten to always put the names of the ingredients in the genitive case, and in many of the formulæ we notice such errors as magnesie sulphatis for magnesii sulphatis, ammoniae carbonatis for ammonii carbonatis, spiritus ammonii aromat. for spiritus ammoniae aromat., etc.

The book is printed in large, clear type, and has an unusually full index.

L. S.

ART. XXXVIII.—*Hospitals: their History, Organization, and Construction. Boylston Prize Essay of Harvard University for 1876.* By W. GILL WYLIE, M.D. 8vo, pp. 240. New York: D. Appleton & Co., 1877.

IN this age of scientific scepticism, when those who are supposed to know most about a subject are usually so provokingly cautious in their assertions with regard to it, it is refreshing to meet with treatises which deal positively with, and settle off hand and peremptorily those questions which experts seem by no means so clear about. Such a work is that of Dr. Wylie, and if a few changes could be made in the laws of chemistry and physics which relate to gases, and also in the methods of production and reproduction of disease germs, it would be a most satisfactory manual, so far as hospital construction is concerned. It is necessary, however, to warn readers that Providence has not yet arranged matters exactly according to Dr. Wylie's ideas, and until it does, at least one-half of his excessively dogmatic statements have no scientific basis. It is evident that nothing should be accepted on the "ipse dixit" of a writer who makes such assertions as the following: "Air should not be allowed to stand still, especially in the dark. With the light on it there will be motion, *for light produces heat*. . . . Air when confined, in a very short time, from the germs that all air seems to contain to a greater or less extent, will foul itself by the birth, life, death, and decomposition of animalcules, and soon loses its vitalizing power" (p. 119). Again, on page 105, we are told that "Malarial and noxious gases float near the ground," and that "Air confined in such (*i. e.* dark) chambers, becomes stagnant, and prolific of myriads of low grades of life or living organisms, which, by decomposition, soon infect it with poisonous matter." All of which is entirely incorrect. Light does not produce heat, air when confined and motionless is purified, so far as living organisms are concerned, because they slowly subside, and the idea that living organisms develop in stagnant air alone, shows a remarkable ignorance of the elementary principles of biology.

Again, on page 127, we are told that "Carbonic acid gas [in the breath], being of a higher specific gravity than air, sinks to the floor." Such a statement might be expected in a circular advocating a patent ventilator, but is melancholy reading in a "Boylston Prize Essay." What possible respect can be had for opinions on ventilation which are based on such a statement as this?

Elsewhere, it is asserted that "In all long narrow chambers, the natural cur-

rent of the inclosed air is in the direction of the long axis, being that of least resistance." This is simple nonsense, for the direction of the current of air will be from one opening to another, no matter where the openings are. Ground air seems to give the author great apprehension, so much so, that he would put layers of slate in the brick pillars, seven or eight feet high, on which the ward is to rest, in order "to intercept the passage of ground air up through them," which again is absurd. Hot-water heating he considers more expensive than open fires, whereas, the fact is precisely the reverse.

We have given specimens enough to prove the unscientific character of the work, and in all that relates to construction, heating and ventilation, what is new is generally incorrect, but it will require a good knowledge of the subject to tell what is new and what is not.

The historical part of the book is a fair compilation, which would have been much improved by consulting Haeser,¹ and the interesting data collected by Virchow, in relation to ladneries or leper hospitals. The statement that "the best encyclopaedias, both English and American, make no reference to the fact that hospitals were known previous to the coming of Christ," shows that Johnson's new Cyclopadia has not been seen, and the statement taken from Bernan (p. 19), that Cardinal de Polignac wrote "Le Mécanique à Feu," is incorrect, since it was written by M. Gauger, as Tomlinson has proved. The book is interesting, but unscientific and illogical in a high degree, and forms an unfavourable contrast with some of the other essays to which have been awarded the Boylston Prize.

J. S. B.

ART. XXXIX.—*Lectures on Practical Surgery.* By H. H. TOLAND, M.D., Prof. of Principles and Practice of Surgery and Clin. Surg. in Med. Dept. of University of California. 8vo. pp. xii., 508. Philadelphia: Lindsay & Blakiston, 1877.

WE have read over two-thirds of this book, and must confess that the perusal has not left its trace by a single new or valuable idea. The author, in his preface, confesses that he could not find time to write a book, but would "talk" one, and a stenographer accordingly "took down his oral lectures."

That Dr. Toland's surgical pathology is scarcely what we ought to expect from a modern professor of surgery, let the following quotations serve as samples: "Pus is unquestionably a secretion. It is prepared [what a delicious indefiniteness lurks in the word!] by the capillary vessels" (p. 77). His 4th class of semi-malignant tumours is "fibroplastic or enchondromatous" (p. 122). Scrofula "may be defined as a peculiar constitution, which, when fully developed, is characterized by the formation of tubercle" (p. 141); and tubercle is defined see-saw-wise as "scrofulous sarcoma" (p. 143). The occlusion of vessels by a thrombus is thus described: "So soon as sufficient inflammation of the internal coat can take place, plastic lymph is effused; this becomes organized, and closes the vessel permanently" (p. 154). "Exostosis means an unnatural growth of a bone" (p. 317).

That his teaching is meagre to very surgical starvation is only too evident if his lecture on any single subject in the whole book is read. Morbus coxarius, for instance, occupies four and a half pages, two of which are given almost wholly to two engravings (neither of which is described or even alluded to), and nearly

¹ H. Haeser, Geschichte Christlicher Krankenpflege, und Pflégerschaften, Berlin, 1857, 8vo. De Cura Aegrotorum, publica a Christianis oriunda, Gryphiswald, 1856, 4to.

a page more to some cases. He also expresses the surprising opinion that "amputation of the hip is much better than resection." No mention is made of the change in the gluteo-femoral fold, or of the peculiar posture; the various stages of the disease are not even named, and, apparently to fill out the hour, the last six lines of the lecture (which began with incised wounds of the joints) discuss(?) resection of the elbow, ankle, and wrist! Five pages suffice for gunshot wounds; three and a half for "diseases of the spine." On the other hand, syphilis, though inadequately treated (for example, no mention whatever is made of atropia in syphilitic iritis!), occupies fifty pages, one-tenth of the book.

In his arrangement of topics, he seems to have followed no systematic plan, but was apparently guided somewhat by the fact that sometimes a subject would fill out the allotted time. Some illustrations have already been given, and the "Table of Contents" suggests many more; Lecture XXXIV., for instance, is a *mélange* of the nose, lupus, the ear, the jaws, the mouth, the tongue, the tonsils, and the teeth; and in Lecture XLII. we have an olla podrida of "skin grafting, epithelioma, deformities of the nose, and bunions."

The sins of omission are no less glaring than those of commission. Pyæmia and erysipelas are nowhere discussed; antiseptic surgery is utterly ignored; immovable apparatuses (except an allusion to the old starch bandage) are not named in connection with fractures; nor are Buck's extension apparatus, nor N. R. Smith's, nor Hodgen's splints. Adams's subcutaneous section of the neck of the femur and Esmarch's method meet with similar neglect; we could therefore hardly expect any mention of the galvano-caustic apparatus or Paquelin's knife. Had the index itself also been omitted, scarcely any loss would have been felt, for its two scanty pages are absolutely worthless.

The whole book, on almost every page, is filled with cases in which the prominence of his patient, rather than the nature of the accident or the disease, seems to be the reason for its introduction. Moreover, were we one of the Judges of the Supreme Court of California, we should object to having embalmed in a book (p. 365) the fact that we had transmitted to two-thirds of our children a hypertrophied nose. The egotism of the author is, however, still more painfully evident in many instances, and we should think would raise issues of personal judgment and professional reputation on every hand, involving him in endless animosities. He narrates many cases in which other practitioners, sometimes mentioned by name, had failed or differed from him, and in which he ostentatiously relates how his own skill had triumphed over their blunders. "I can say to strangers in this class [the regular members knew it, of course] that I have never in my life made a mistake in the diagnosis of serous or purulent secretions" (p. 359). "I have performed more operations for aneurism than any surgeon in America" (p. 170); the grammar of which sentence about equals its modesty. But when we reach McClain's case, and read, "It was one of my triumphs, and was called Toland's luck in surgery" (p. 306), we cease to criticize.

The book is handsomely printed; the ideas are in general well expressed, and the illustrations are well done, though of no special value. With so many really excellent and thorough text-books on surgery as we possess, we see no field for this work, and fail to find in its character, or in the needs of the student or practitioner, any justification for its publication.

W. W. K.

ART. XL.—*The Morphology of the Skull.* By W. K. PARKER, F.R.S., Hunterian Prof. at Royal College of Surgeons, and G. T. BELLAMY, M.A., B.Sc., etc. pp. 368. London: Macmillan & Co., 1877.

WHILE so much has been said respecting the points of resemblance between the medical profession in England and this country, little or nothing has been remarked of the contrast. Scarcely a month passes without a work being issued from the English press concerning which expectations of author and publisher cannot be materially aroused in contemplating its prospective sale in the American market. Indeed, many such books cannot be published in America at all, except as private speculations on the part of the authors.

English medical journals have published from time to time within the last twenty years, series of elaborate and technical papers, on the anatomy of animals. These papers are never copied in the American press, nor do any contributions resembling them in kind ever appear therein. We have few or no writers and practitioners in this country of the type of MacLise, Humphry, and Callender. All these facts point to the one conclusion, that the science of anatomy as understood by many leading Englishmen, and as sympathized with by the body of the English profession, has no place in the thought of the American physician. Indeed, the student is continually warned against indulging in such sympathy, and recently a brilliant New England professor informed his students that if they desired to indulge in such they had best take down their signs or never put them up.

The book before us, which has excited these reflections, is an abridgment of a number of memoirs by W. K. Parker, who, we have been informed from private sources, was at the time of their preparation actively engaged in the general practice of medicine. This one fact is, perhaps, the most interesting one which can be gleaned from the entire volume. Many who would care nothing for the technical matter of the book, would recall this fact with interest. As long as every man must have a "hobby" for his hours of relaxation, no one need object if it chances to take the direction of studies in the *Morphology of the Skull*.

The work is divided into nine chapters, arranged as follows: (1) Preliminary Embryology. (2) The Skulls of the Dog-fish, and the Skate. (3) The Skull of the Salmon. (4) The Skull of the Axoloth. (5) The Skull of the Common Frog. (6) The Skull of the Common Snake. (7) The Skull of the Common Fowl. (8) The Skull of the Pig. (9) The General Morphology of the Skull.

The text is illustrated with eighty-six well-executed wood-cuts, and the whole is expressly designed as an educational volume, for the convenience of students. Summaries of nearly every stage and of each chapter from the second to the eighth have been carefully drawn up. By the help of the index, the history of individual bones or tracts can be examined comparatively. The authors are enlisted in the ranks of advanced scientific workers, and close their volume with an eloquent passage upon the value of morphology as an evidence of design in nature.

H. A.

ART. XLI.—*An Index of Diseases and their Treatment.* By THOMAS HAWKES TANNER, M.D., F.R.S. Second Edition. Revised by W. H. BROADBENT, M.D., F.R.C.P., Phys. to the London Fever Hospital, etc. 8vo. pp. xxx., 432. Philadelphia: Lindsay & Blakiston, 1877.

THIS book is not intended for students, but for practitioners of medicine who are, of course, familiar with the nature of disease and its symptoms, but who

sometimes need to refresh their memory as to its treatment, when, as occasionally happens, the remedies fail which they are accustomed to rely upon. The plan of the book is simple. About two-thirds of it are devoted to a brief description of every disease to which flesh is heir, and a list of the remedies usually employed in its treatment; reference being frequently made to an appendix containing upwards of four hundred prescriptions, all of which have proved useful in the hands of competent observers. This appendix also contains a chapter on Climates for Invalids, and one on Mineral Waters.

The book is certainly an excellent one of its class, but its usefulness to the physicians of this country would have been enhanced if the American publishers had secured the services of an editor. In looking over the prescriptions it is not rare to find several on a page containing articles not officinal in the Pharmacopœia of the United States, and in one or two instances they are wholly made up of such preparations. An editor would probably also have rendered the book more complete by the addition of a few remarks on the health-resorts and mineral springs of this country.

J. H. H.

ART. XLII.—*The Fourth Annual Report of the Board of Health of the City of New Haven*, 1876. 8vo. pp. 64. New Haven, 1877.

BRIEF as it is, this report contains the matter often separately presented in registration reports. Its sanitary suggestions are sensible and practical, but present little matter for special note or criticism.

The mortality reports present some points of interest. Measles caused 16 deaths in the year 1876 (1.3 per cent. of all) against 1 in 1875. All occurred in the first six months. Of 51 deaths from scarlet fever (4.13 per cent.) only 2 occurred between May and November. The average number for ten years has been 59, ranging from 98, two separate years, down to 3, in 1874 (8.66 per cent. to .28 per cent.).

Croup is debited with a mortality of 29, and diphtheria of 80—the latter much larger than ever before. Typhoid fever, on the contrary, shows in 1875 a decided, and in 1876 a still more marked, decline, as a cause of death. Showing in 1867 and 1868 a percentage of 5.79 and 7.79, it then remained nearly stationary at 4 to 4.5 for six years. Then, as before noted, it fell in 1875 to 3.01, and in 1876 to 1.79. Improved sewage of the city is noted as having probable influence: but no data are given of any specially great works.

Of 124 children killed by cholera infantum—over 10 per cent. of all decedents—79 died in July.

The mortality from consumption shows a curious irregularity, as here reported, for ten years. Although the average percentage to all deaths is 14, and that of 1876 only 12.21, yet we can scarcely draw any favourable inference, since, though the highest figure, 29.27, occurred in 1867, we find 9.83 in 1872 followed by 18.36 in 1874.

Deaths from pneumonic congestion and inflammation are almost equally irregular, though presenting no apparent relation to the other series. The mortality varies from 7.84 down to 2.34 in different years.

We are glad to notice that the health officer is a physician, and judge that Dr. Lindsley is a zealous and intelligent incumbent.

B. L. R.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

The Acidity of the Human Gastric Juice in a Case of Gastric Fistula.

M. RICHET (*Journal de Pharmacie et de Chimie*, May) has made researches in a case of gastric fistula. The person experimented on had had gastrotomy performed the previous year by Professor Vernueil on account of complete closure of the œsophagus. The impermeability of the œsophagus is so much the more interesting, as it prevented any admixture of the gastric juice with saliva. This was proved by making the patient chew sugar mixed with ferrocyanide of potassium, and finding no trace of this salt in the contents of the stomach. The juice itself was collected after the stomach had been washed out with distilled water, its secretion being excited by the presence of sapid substances in the mouth. Thus obtained it is a colourless liquid, slightly ropy, easily filtered, having little odour, and putrefying spontaneously. The average duration of the sojourn of food in the stomach was 3 to 4 hours for such aliments as starch, fat, and meat; for milk, $1\frac{1}{2}$ hours; for water and alcohol, 30 to 40 minutes. At the end of four hours the stomach was generally empty, and hunger did not supervene till two hours later. M. Richet thinks that the food does not leave the stomach gradually; it seems, on the contrary, to pass the pylorus *en bloc*, and all at once. During the first three hours of digestion the volume of the mass does not vary; then abruptly, in a quarter of an hour or more, the mass disappears entirely, only the *débris* remaining behind.

M. Richet arrives at the following conclusions: 1. The mean acidity of the gastric juice, pure, or mixed with the food, is equivalent to 1.7 hydrochloric acid for 1000 grammes of liquid (.17 per cent. of hydrochloric acid). It is never lower than .05 nor higher than .32 per cent. 2. The quantity of liquid found in the stomach has no influence on its acidity; whether the stomach is full or almost empty, its acidity is almost invariable. 3. Wine and alcohol increase, cane-sugar diminishes, the acidity. 4. If we inject into the stomach acid or alkaline liquids, the gastric fluids tend very rapidly to recover their normal acidity, so that at the end of an hour the acidity will return to the mean. 5. The juice is more acid during digestion than when this process has ceased. 6. The acidity increases a little toward the end of digestion. 7. The sensations of hunger or thirst do not depend on the state of acidity or on the emptiness of the stomach.—*London Med. Record*, Oct. 15, 1877.

MATERIA MEDICA AND THERAPEUTICS.

On Hydrobromic Acid.

Mr. T. F. ABRAHAM (*Pharmaceutical Journal*, Oct. 20) says: Hydrobromic acid, or rather the impure solution thereof as produced by the process described by Dr. Fothergill, seems to have firmly established itself as an useful agent in combination with quinine. It is found that, in many cases, when the use of quinine causes headache or other disagreeable symptoms, the addition of fifteen-minim or twenty-minim doses of hydrobromic acid entirely removes the difficulty. Whether its administration as an independent remedy will be found desirable, I think still remains to be seen.

It must be, however, a matter of regret that the name should have come in pharmacy to be applied to an impure and somewhat indefinite product. It is to be hoped that in our next appendix to the *Pharmacopœia* a form will be introduced that, while keeping pretty closely to the strength of Fothergill's acid, which I think has been found convenient, will furnish a fairly pure and definite product.—*London Med. Record*, Nov. 15, 1877.

On Phosphate of Lime.

In an article in the *Bulletin de Thérapeutique*, t. xc., MM. PAQUELIN and JOLLY arrive at the following conclusions: 1. Phosphate of lime is absorbed only in very small proportion. 2. The organism in general consumes very little of it. 3. The circulation carries only insignificant quantities of the phosphate; with the exception of the bones, our tissues contain, so to speak, only traces. 4. Lime enters the organism in two states; in small quantity, in the form of bisulphate, and in considerable proportion, in the form of salts that are not phosphates. A part of the non-phosphorized lime-salts pre-exists in the food (carbonate of lime); the other part is one of the products of the decomposition of the sulphate of lime in the food by the acids of digestion (chloride of calcium, lactate of lime, etc.). 5. The organism makes its phosphate of lime by a double exchange, and finds in the food all the elements necessary for increasing the production of this substance, according to its needs. 6. The greater part of the phosphate of lime in the urine is found in the bladder; and the whole of the salt in the urine is therefore not a direct product of disassimilation. 7. Of the two elements, phosphoric acid and lime, which enter into the composition of phosphate of lime, the phosphoric acid is absorbed in certain proportions in the form of alkaline phosphate, while the lime is directly thrown out by the intestines. 8. The addition of phosphate of lime to food is an obstacle to nutrition. 9. The soluble preparations of phosphate of lime act primarily as acids, and then, in consequence of the changes which they undergo in the intestine, they act, secondarily, in a certain measure, as phosphates having another base.—*London Med. Record*, Nov. 15, 1877.

Transformation of Salicylic Acid.

M. BYASSON has sought to determine what are the transformations which salicylic acid undergoes after being swallowed by man. Numerous experiments have led him to the following conclusions: Salicylic acid, swallowed by man in a state of salicylate of soda, appears in the urine, and may be detected twenty-five minutes after its demonstration by its reaction with perchloride of iron; a dose of forty grains is eliminated in from about twenty-six to forty hours. 2. In its passage through the body, a portion of the salicylate is eliminated unchanged, another

portion is transformed into salicine, into salicylic acid, and probably into oxalic acid. 3. The first urine passed, some hours after ingestion of thirty to forty grains of salicylate of soda, deviates to the left of the plane of polarization; the deviation is due to the salicine produced. 4. The salicylic acid increases in the urine the proportion of azotized substances and of uric acid. 5. Salicine swallowed by man is eliminated unchanged, and with its optical properties, a few hours after it is taken. But by what chemical reaction is this transformation effected of salicylate of acid into salicine or salicylic acid? On this subject only theories can be formed, but the fact is acquired to science.

A propos of the demonstration of salicylic acid, M. GUBLER has remarked that in certain cases the urine is diminished in quantity, whilst in others it is augmented. When, indeed, salicylic acid acts upon normal kidneys, there is diuresis; on diseased kidneys, on the contrary, there is a diminution of the quantity of the urine; in these cases even albumen is sometimes found in considerable quantities. There are, then, two indications here: first, strong doses of salicylic acid may produce a renal lesion; and further, when the kidneys are congested, it is imprudent to prescribe this medicine.

M. BUCQUOY supports this observation of M. Gubler, and asks if it is not from uræmia that certain patients died so rapidly when treated with salicylic acid. He mentions further the cases in which this substance was the cause of abortion at six months.—*Brit. Med. Journ.*, Nov. 3, 1877.

Mode of Action of Anaesthetics.

How do anaesthetics act? Is it by combining with certain elements of the ganglion cells of the central nervous apparatus, and thus, by altering their molecular composition, preventing the generation of nerve-force, or interfering with its manifestation? Is it by modifying the circulation in the nerve-centres, or is it by changing the composition of the blood, and rendering it less fit for the nutrition of these highly complex structures? BINZ concludes an article on the officinal sleep-producing substances in the *Archiv für Experimentelle Path. u. Pharm.* by saying that these agents possess the power of producing a kind of coagulation of the substance of the cerebral cortex, whilst other agents, though nearly allied to the former in chemical composition, do not possess this power. Morphia, chloral, ether, and chloroform possess, he maintains, a strong affinity for the substance of the cortex of the brain in man; and when they are introduced into the blood they enter into combination with the cerebral substance, opposing or impeding the disintegration of the living substance, and thus rendering it unfit to discharge the functions required of it in the living state. In a paper on the same subject in the *Centralblatt* HEINRICH RANKE observes that protracted study of the effects of anaesthetics has led him to very similar conclusions. He has found that the action of chloroform, ether, and amyl on frogs first produces a condition in which, just as in poisoning by curare, no contraction can be induced in muscle by any kind of irritation applied to the motor nerves, though the muscular tissue itself reacts to direct stimulation, and the current in the nerves remains constant both in force and direction. In a later stage of the anaesthesia the muscular tissue itself ceases to respond to the most powerful induction currents, though its proper electro-motor force remains unweakened; and, lastly, at a still more advanced stage, the whole muscular tissue of the body passes into a condition of rigor. He has further found that a solution either of albumen from the brain or of myosin from muscle in very weak salt and water is precipitated by the vapour of the three above-named anaesthetics, and that their power of producing muscle rigor in the case of muscle depends on the coagulation of the myosin. It would have been exceedingly interesting if the view of Binz to the effect that morphia acts also as a coagulating

agent upon the ganglion cells could be corroborated, since, if such were the case, it would tend to show that the various kinds of anesthetics act essentially in the same manner.

Additional experiments have lately been instituted by Ranke, which demonstrated that not only chloroform and chloral hydrate, when injected into the arteries, caused rapid stiffening of the muscles, but that the same influence was exerted by ether, amyl, bromoform, and bromhydrate, whilst when tannin, cupric sulphate, mercury chloride, ferric sulphate, or spirits of wine were injected, though strong fibrillar contractions occurred, and coagulation of the blood, followed by death, in no instance was rigor produced. Iodoform, indeed, appears to form an exception to the conclusion that the rigor-producing action of the anesthetics is something peculiar to them, for it is not known to possess anæsthetic properties. If injected in solution in ether, rigor is immediately produced, but ether has itself a stiffening action on muscle. Nevertheless Ranke thinks he can distinguish between the action of the iodoform, which is immediate and intense, and that of the ether, which comes on later and is less powerful; and he attributes the failure of iodoform to act as an anæsthetic to its insolubility merely, which, as it were, masks its proper action. Ranke was unable to find that solutions of morphia were able to exert any coagulating influence on muscle either within or without the vessels. It may be asked what relation does the action of these agents on muscle bear to the process of anæsthesia, and in reply Prof. Ranke observes that anæsthetization obviously cannot depend on such a complete coagulation as admits of no further change, since the effects produced by anæsthetic agents are but transitory. But it is very conceivable that an action which in its final stages leads to coagulation of albumen may, in its earlier stages, render, to a certain extent, fixed and immovable the albuminous molecules in the ganglion-cells of the brain, and afterwards in nerve and muscle, the effect passing off with the removal of the cause.—*Lancet*, Nov. 24, 1877.

Action of Pilocarpin on the Eye.

M. GALEZOWSKI, in a communication to the Société de Biologie (*Gaz. des Hôp.*, November 6), narrated the results of the trials he had made on the eye with pilocarpin, the active principle of jaborandi. These show it to be possessed of powerful myotic powers. One drop of a mixture consisting of ten parts of water and one-fifth of a part of pilocarpin, instilled into an eye the subject of paralytic mydriasis, gives rise to such a contraction of the pupil that at the end of half an hour this measures scarcely a millimetre in diameter, the contraction continuing for from five to eight hours. This result has been verified upon a great number of patients, so that it may be now stated that pilocarpin possesses myotic powers as active as those of eserine, while it does not excite irritation like that substance, the prolonged employment of which may give rise to peri-orbital pains, intense conjunctivitis, and great nausea. M. Galippe observed that the experiments which he and M. Bochefontaine had made were attended by precisely the same results as those described by M. Galezowski.—*Med. Times and Gaz.*, Nov. 17, 1877.

Sulphate of Atropia in Pathological Sweating.

M. ROYER, in his thesis (*Lyon Méd.*, Nov. 18), furnishes the results of the trials made with this substance by Prof. Vulpian since 1873. These demonstrate the efficacy of atropia in sweating under the most various circumstances—as phthisis, rheumatism, convalescence, prolonged suppuration, hysteria, and the influence of jaborandi. The dose of the sulphate varies from half a milligramme to one and a half, it being very rarely desirable to go beyond this. The most

convenient form to administer it is in pills or granules, each containing half a milligramme. In order to act with efficacy, the medicine should be given a few hours prior to the occurrence of sweating. Thus, in the nocturnal sweating of phthisis, the pill should be given at eight or ten o'clock in the evening. At least two hours should elapse between the doses, and, if two or three are required in the twenty-four hours, these should be divided by equal intervals. From two to four days suffice to produce a suppression or notable diminution of the sweats; but, in order that the effect may be durable, the use of the atropia should be prolonged, with some diminution of the dose, for eight or ten days. The author of the thesis agrees with Prof. Vulpian in believing that it is nowise imprudent to suppress sweating in rheumatism.—*Med. Times and Gaz.*, Nov. 24, 1877.

MEDICINE.

The Excretion of Indican and Lime in Disease.

In an interesting communication to the *Centralblatt Med. Wiss.* (Nos. 20-22, 1877), Professor SENATOR, of Berlin, sums up the main results of a series of observations on the excretion of indican by the kidneys which he has made in more than a hundred cases of diseases of various kinds. He also adds some remarks on the excretion of lime in the urine in various diseased conditions. We may premise that these researches have a direct bearing on diagnosis, and are therefore of clinical as well as of scientific interest. "In general terms it may be stated," says Professor Senator, "that an abnormal excretion of indican occurs much more frequently in chronic than in acute diseases, and it is especially in consumptive states and wasting diseases that it is observed. Patients who can scarcely eat anything, and who either vomit part of their food or else digest it badly, frequently pass enormous quantities of indican in the urine, especially in comparison with healthy persons taking the same or even a larger amount of food. The greater the anemia, the greater the excretion of indican generally becomes." Indican excretion is enormously increased in diffuse peritonitis, and to a less extent in sub-acute, and in certain cases of circumscribed peritonitis it is also considerable. In other febrile diseases (pneumonia, pleurisy, meningitis) the amount of indican in the urine is very frequently very large when compared with the small amount of nourishment taken by the patients; and in typhoid fever there may even be an absolute increase, whether diarrhea be present or not.

Among chronic diseases, *cancer of the stomach*, whether the neighbouring organs be involved or not, is attended by the largest excretion of indican, and this independently of the condition of the stools. Professor Senator examined twelve cases of this disease, and in all the amount of indican was enormous. In ulcer of the stomach the indican is also present in abnormal quantity relatively to the food ingested, especially if there have been recent hæmorrhages; the amount is, however, generally smaller than in cancer. Next to cancer of the stomach, the largest increase in the excretion of indican is caused by multiple *lymphomata* and *lymphosarcomata*, especially when situated in the abdominal cavity. The urine of children with glandular swellings and the symptoms of the so-called *tubes mesenterica* is also often extraordinarily rich in indican, and it may be stated generally that in a number of children's diseases indican is present in large quantities. In advanced phthisis, especially where there is violent diarrhea and amyloid degeneration of the liver, spleen, and kidneys, indican is generally much increased. Amyloid degeneration of the kidneys due to other causes, *e. g.* syphilis, causes *no* increase

in the amount of indican in the urine; and the same is true of acute or chronic diffuse parenchymatous nephritis. On the other hand, in four cases of granular kidney, a large amount of indican was found to be excreted. In chlorosis, in the various forms of *leukamia* and *pseudo-leukamia*, and in progressive pernicious anaemia, there is a moderate increase in the indican excretion; but even when the amount of wasting and the loss of strength in pernicious anaemia exceed those in cancer of the stomach, as far as Professor Senator's observations go, the excretion never attains the same proportions as in the latter disease. The diagnostic value of this fact, if confirmed by other observers, is self-evident. Intestinal obstruction dependent on mechanical causes, or on intussusception, appears (in the absence of cancer or peritonitis) *not* to cause much excretion of indican. In some cases where there is an abnormal excretion of indican, there is a simultaneous increase in the amount of lime in the urine. This is the case in phthisis, even where very little food is taken, and in spite of the presence of diarrhoea. It also occurs in children with multiple swellings of the glands and with rickets. In acute febrile diseases, however, such as pneumonia or typhoid fever, the excretion of lime and that of indican appear to diverge from one another, that of the former being diminished, and that of the latter increased. In pleurisy with effusion alone has Professor Senator several times observed that there was an increased excretion of lime, notwithstanding the presence of fever.

The method adopted in testing for indican in the above research was the following:—The urine is, if necessary, to be freed from albumen in the usual way, and ten to fifteen cubic centimetres are to be mixed with an equal quantity of fuming hydrochloric acid in a rather large test-glass. A concentrated solution of chloride of calcium is then to be added gradually, drop by drop, until the blue color of indigo is fully developed, and the whole is then to be shaken up with chloroform. The latter takes up the freshly precipitated indigo, and sinks with it to the bottom of the glass, where the amount can be estimated with a little practice, in the same way as albumen is usually estimated, but far more accurately. This remark applies to *pale* urines (which, as a rule, are the richest in indican). Highly pigmented urines must be first decolorized by acetate of lead, avoiding an excess of the latter reagent before applying the indican tests.—*Med. Times and Gaz.*, Sept. 22, 1877.

Diminution of the Acidity of the Gastric Juice in Febrile Conditions.

An interesting illustration of the relation of the hydrochloric acid of gastric juice to the febrile process is afforded by a case reported by Dr. VON DEN VELDEN, assistant to Professor Kussmaul, at Strasburg, in the *Berl. Klin. Woch.* (No. 42, 1877). The patient, a man of sixty, had suffered from gastric symptoms for about ten years, which latterly assumed the character of those of dilatation of the stomach, pain in the epigastrium, repeated vomiting, etc., which reduced his strength to such a degree that he was obliged to enter the hospital for relief. He was admitted on February 27, 1877, and treated with the stomach-pump with great benefit, and the disappearance of the vomiting. The fluid which was pumped out (in the morning before breakfast) was generally quite clear, and ranged in quantity between 100 and 700 cubic centimetres. At first it contained sarcine and torulae, with abundance of peptones, and a gradually diminishing amount of undigested food. The percentage of hydrochloric acid was determined by Resch's colour test (described in the *Zeitschrift für Phys. Chemie*, Bd. i. 3), and varied between 0.025, 0.03, 0.05, 0.13, 0.15, 0.16, and in one instance 0.3 per cent. In May, when the patient's improvement had become so great that he was about to leave the hospital, he began to suffer from diarrhoea, and on June 7, headache, fever, and general *malaise* ushered in an attack of typhoid fever

(source not stated), which ran a normal course, and terminated about the twenty-second day. During the attack the stomach-pump was used daily before breakfast, and the liquid removed carefully examined. In quantity it was less than previously, and scarcely reached 100 cubic centimetres. The main difference in its composition revealed by analysis was *the absence of free hydrochloric acid*, although its reaction was faintly acid, probably from the presence of lactic or acetic acid. A flake of fibrin remained quite undigested whilst in some of the filtered liquid in the cold; whereas the addition of an equal volume of 0.2 per cent. dilute hydrochloric acid caused its rapid disappearance. On the cessation of fever, on June 7, Dr. Von den Velden naturally expected that hydrochloric acid would again be found in the gastric liquid. He had, however, to wait until the *eighth* day after the temperature had become normal before traces of it reappeared. On the *ninth* day 0.08 per cent. was detected, and from this time onwards the percentage ranged between the limits mentioned above. It might be objected that since in this case the gastric contents were removed before food had been ingested, the absence of acid might depend on the absence of a stimulus to its secretion; but this objection fails, because the patient happened one morning to breakfast before being pumped, and still not a trace of free hydrochloric acid was present. The absence of acid was also not due to the patient's diet during the period of fever, for the latter consisted, *inter alia*, of milk, *bouillon* containing eggs, and other nitrogenized substances, in the presence of which acid juice would normally be secreted. Lastly, there was no increased secretion of alkaline mucus which would mask the free acid by neutralizing it as soon as secreted. This case confirms the observations of Pavy, Hoppe-Seyler, Manassein, Leube, Uffelmann, and others, that it is the acid, and not the pepsin, of the gastric juice which suffers diminution in fever, and it suggests the more extensive use of hydrochloric acid during the period of elevated temperature.—*Med. Times and Gaz.*, Nov. 10, 1877.

Salicine in Rheumatism.

MR. SAMSON GEMMELL and MR. FRANK SHEARER contribute a paper on this subject to the *Glasgow Medical Journal* (Oct. 1877), in which they give the following conclusions:—

1. In acute febrile articular rheumatism, free from all complications, salicylate of soda is the most powerful therapeutic means which we possess; it cures more rapidly than any other.
2. It is impossible to assign to the treatment a uniform duration of days.
3. It does not prevent the cardiac, pulmonary, and cerebral complications of acute rheumatism; and where these exist prior to the treatment, it has no effect on them.
4. In spite of its antipyretic properties, it does not hinder the ascent of the temperature, which announces the advent of visceral complications.
5. In acute rheumatism, with slight complications, it is well to push the salicylate for its antipyretic and analgesic effects, but the use of revulsives should not be forgotten.
6. In acute rheumatism, with grave complications, it is well not to rely on the salicylate alone, but also to have recourse to other medicines.

Etiology of Typhoid Fever.

M. CH. BOUCHARD read before the International Medical Congress, at Geneva, Sept. 12th, 1877, an interesting report on this subject, which is published in *Revue Mensuelle de Méd. et de Chir.* for Nov. The following are his conclusions:—

In the etiology of typhoid fever the doctrine of contagion and that of infection are both too exclusive. The doctrine of its fecal origin does not correspond with the universality of the facts. The doctrine of spontaneous development is not proved. Typhoid fever is a specific, miasmatic disease.

In its production it so happens that the morbid matter coming, we know not whence, but not necessarily from an infected organism, is capable of developing itself in animal matters which become then a focus of infection, and in the living human organism a focus of contagion. The contagion is almost always mediate.

The morbid matter arising from foci of infection, or of contaminated individuals, may contaminate the air, the soil, or the water. This morbid matter may be disseminated by men, by the contaminated objects, by the air, and especially by drinking water. The influence of reservoirs and of defective sewers, neglected or badly constructed, is shown, whether regarded as agents of infection or of mediate contagion. The influence of variations of the level of the subterraneous sheet of water is not clearly established.

Diphtheria complicating Enteric Fever.

At a late meeting of the Pathological Society of London (*Lancet*, Nov. 10, 1877), Dr. GREENFIELD showed a recent specimen of diphtheritic false membrane in the larynx and pharynx from a case of enteric fever. The case was that of a child, five years of age, who had been in St. Thomas's Hospital under the care of Dr. Murchison for about fifteen days. There was swelling and slight ulceration of Peyer's patches and solitary glands at the lower part of the ileum, the ulcers being small, round, and sharply excavated. In the larynx, upper part of trachea, and posterior surface of the palate and fauces, there was a thin layer of false membrane and muco-purulent secretion. The exudation was met with about the posterior nares and the orifices of the Eustachian tubes; but there was none on the anterior surface of the palate. Dr. Greenfield remarked that ulceration of the small intestines had been described in diphtheria, and he had often seen swelling of the solitary glands of the ileum in that disease; but the present was undoubtedly a case of enteric fever, and the questions raised by the case were, first, what was its relation to true diphtheria, and next whether diphtheria exists as a distinct specific disease at all.

Dr. MURCHISON said the patient in question was under his care at the hospital. The case was one of enteric fever in about the third week. Another child in the same family had recently had an abortive attack of enteric fever. In the present case laryngeal symptoms came on two days before death. No membrane could be seen on the fauces, which, with the tonsils, were red and swollen; and he hesitated to say whether the case was one of diphtheria complicating typhoid, or one of the other laryngeal complications that may occur in that disease. In addition to the laryngeal symptoms, there were signs of consolidation of the lungs. A form of diphtheria which he was in the habit of regarding as different from true diphtheria was not an unusual complication of enteric fever, and more often of typhus and scarlet fevers. Such cases occurred at the Fever Hospital, where it was curious that very few cases of diphtheria itself were admitted.

Dr. F. SÉMON had seen, both here and in Germany, cases of diphtheria complicating typhoid; and, as a rule, in such cases, the diphtheritic inflammation begins in the larynx and spreads upwards, but does not affect the upper part of the pharynx.

Dr. MURCHISON added that even when the laryngeal symptoms were severe, there had been no difficulty in swallowing. One of the members of the family had died of enteric fever. In reply to Mr. Pugin Thornton, he said that as a rule the complication occurred about the third or fourth week of the fever.

Dr. Clifford Allbut remarked that diphtheritic complications of typhoid fever seemed to occur in some epidemics and not in others. He had been led to the opinion that there was some relation between enteric fever and diphtheria, partly from the above fact, and partly because diphtheria springs up in the same localities as typhoid does, and under similar conditions. He instanced the occurrence of an epidemic of diphtheria in a Yorkshire village being shortly followed by an epidemic of typhoid.

The Therapeutics of Diphtheria.

Mr. J. GRAHAM BROWN, Senior President Royal Medical Society, Edinburgh, publishes in the *Journal of Anatomy and Physiology* (Oct. 1877) a series of experiments which he performed in Prof. Klebs's laboratory in order to ascertain what drugs seemed to have an influence over the diphtheritic process. His detailed experiments seem to indicate,—

(1.) That the contagious fluids of diphtheria are rendered powerless to propagate the local disease after mixture for a longer or shorter time with solutions of hydrochlorate of quinia, salicylate of soda, and benzoate of soda.

(2.) That the most powerful of these three is benzoate of soda.

(3.) That the administration of benzoate of soda hypodermically, previous to the inoculation of diphtheria, has a power of preventing the establishment of the disease; but that this protection only extends to a certain length.

Mr. Brown very properly remarks that it would be very rash to suppose that any one of these points has been firmly established by the amount of evidence which is contained in this research. There are so many sources of error ever present as to preclude such a possibility. Still, however, the *uniformity of the results* obtained is so striking as to increase greatly their value.

On the Use of Iron in Epilepsy.

Dr. W. R. GOWERS, Assistant Physician to University College Hospital, in an interesting article on this subject (*Practitioner*, Oct. 1877), thus summarizes the important facts regarding the use of iron in epilepsy:—

1. In a certain proportion of cases of epilepsy, which are probably a minority of the whole group, iron does increase the frequency and severity of the fits.

2. In a large number of cases iron may be given without any recognizable influence on the attacks.

3. In many of the cases in which its effect is injurious, the increase in fits does not occur until after the iron has been taken for some weeks, and in some of these cases the first effect of the drug is to cause a diminution in the frequency and severity of the attacks.

4. In some cases this beneficial effect, instead of being transient, is permanent; and great benefit results from the continued administration of iron, so that by its use alone some cases may be cured, as far as the affection can be said ever to be cured by drugs.

With regard to the indications for the use of iron, Dr. Gowers thinks that it is certainly most frequently useful in the anomalous forms of epilepsy which stand midway between epilepsy and hysteria, and have long been known by some mixed term, and in which co-ordinated and apparently purposive spasmodic movements are part of the phenomena of, or commonly succeed, the "epileptic" portion of the attack. Whatever be the exact nature of these cases, many are certainly benefited in a remarkable degree by iron. The cases narrated show, however, that it may also do good when the attacks are of a more purely epileptic type. Anæmia, as an indication for the use of iron, is, Dr. Gowers thinks, of

less value in epilepsy than in other diseases. The facts he adduced suggest the conclusion that iron has an influence on the nervous system analogous to that exerted by zinc, silver, and some other metals, and that it is to this rather than to its hæmatinic influence that the beneficial effects of its administration are due.

Treatment of Croup.

Dr. S. OLDONI relates in the *Annali Universali* for March, five cases of croup observed during the epidemic at Spezzia, in which he successfully employed copaiba and cubebs. His plan was to give to adults, every two hours, a dessert-spoonful of a syrup composed of 14 grammes (about 5 ounces) of balsam of copaiba, 20 grammes (about 7 ounces) of powdered gum, 50 grammes (about 17½ ounces) of water, and 14 drops of essence of mint; and also, every two hours, a table-spoonful of a mixture consisting of 12 grammes (186 grains) of recently powdered cubebs and 240 grammes (8 ounces) of syrup. For children the dose was reduced. The malady disappeared in a period of two or three days, rarely extended to seven.

Four of the five cases were children under four years of age; some affected with simple croup, others with croup complicated with diphtheria. The condition of the patients when first put under treatment was very grave; there was high fever, the submaxillary glands were engorged, the voice and crying were weak, the cough harsh, and there was marked dyspnoea. The beneficial effects of the medicine above described occurred without the use of emetics, mercurials, or any other treatment.—*London Med. Record*, Oct. 15. 1877.

The Etiology of Pneumonia.

In the last part of the seventieth volume of Virchow's *Archiv*, Dr. BERNHARD HEIDENHAIN discusses the question which has lately received much attention, whether pneumonia is to be regarded as an infectious disease or not. A negative conclusion would undoubtedly be arrived at if it could be shown that a non-specific lesion was capable of exciting an attack of true croupous pneumonia, and Dr. Heidenhain set himself to experiment on this point in the Pathological Institute of Breslau, under the guidance of Dr. Cohnheim. After some consideration, the simplest method of affecting the lungs appeared to be to make the animal breathe hot air, and with this object a cannula was introduced into the trachea connected with a tube, a portion of which could be heated at will. The experiments lasted fifteen and thirty or more minutes. In the course of three, five, or seven days the animal was killed, but in all instances the lungs were found to be perfectly healthy. In other instances the animals were made to breathe ice-cold air from a tube which passed through a refrigerator. The effects were here, however, also negative, nor was any pneumonic inflammation established when the animal breathed an artificially-heated and cooled atmosphere alternately for periods of about a quarter of an hour each. Some explanation of the absence of all inflammatory reaction in the deeper parts of the lungs is gained, from the fact, which he ascertained by an ingenious arrangement of thermometers, that dry air, if heated rapidly, parts with its heat, or if cooled rapidly, acquires the temperature of the body in passing down the trachea, so that the deeper parts of the lungs are never exposed to very hot or very cold air, however high or low, within, of course, certain limits, the temperature of the air may be, provided it is dry when inspired, a point of some importance in pathology. If the air be moist to begin with, the results are different: for then, if breathed at a temperature above 130° Fabr., the lungs begin to be affected, the condition established resembling that of catarrhal pneumonia. The vapour of acetic acid produced effects similar to

those of hot moist air. Heidenhain found it to be impossible to experiment with other gases, such as chlorine, for either they proved rapidly fatal, or if so diluted as to be without influence on the general economy, the lungs also remained intact.

Heidenhain's researches, therefore, lead him to the conclusion that true croupous pneumonia cannot be excited by irritation of the respiratory passages. If, he says, we are to regard as essential features of croupous pneumonia that one lobe of a lung or part of a lobe (lobar pneumonia) should be affected throughout its whole substance, that there should be coincidently pleurisy, that the trachea and bronchi should remain intact, or at least be only secondarily affected, then he has been unable in any of his experiments to establish that disease. In all cases where any disease at all was produced, the trachea and bronchi were primarily and the lungs were secondarily affected, and the affection of the lung presented in all cases essentially similar characters. There were more or less numerous small foci of disease which corresponded with what in human pathology would be called catarrhal pneumonia or broncho-pneumonia. Pleurisy was invariably absent. The general result, therefore, arrived at by Heidenhain is rather in favour of the existence of some specific agent as the cause of pneumonia.—*Lancet*, Sept. 1, 1877.

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Cold Washings and Douches in Tuberculosis.

Dr. POGAENIK, of Vienna, in the *Allgemeine Wiener Medizin. Zeitung* for August 21, alleges that he recommended water treatment in tuberculosis in the form of cold frictions before Brehmer commenced his douches (see *Monthly Abstract of Medical Sciences*, Dec. 1876, p. 554), and strongly maintains the superiority of his plan, which is as follows:—

The patient, on waking in the morning, strips, and, standing on a dry cloth, sponges himself all over with water varying in temperature from 10° to 20° Reaumur (55° to 77° Fahr.), according to the temperature of the air at the time. He then rubs himself down with flesh gloves for about five minutes, completing the drying process by envelopment in a linen sheet. He returns to bed, and remains there from half an hour to an hour well covered up, though not sufficiently to induce perspiration. While reaction is going on, it is necessary that the lung movement should be reduced to a minimum.

Dr. Pogaenik was led to the adoption of cold water frictions in tuberculosis by observing their good effect on serofulous glands, which, he states, diminished more rapidly under their use than under a trial of iodine or cod-liver oil, and he declares that his results in tuberculosis of the lung are not less favourable. The influence of this treatment is:—

1. To promote normal action of the skin;
2. To relieve congested states of the lung by derivation to the skin;
3. To harden the patient, and thus enable him to pass more time in the open air;

Increase of appetite and strength, with a lowering of the temperature, are stated to follow; but these improvements are not to be expected where the pulmonary lesions are very advanced, or where the blood is disorganized; but the treatment is not contraindicated in hæmoptysis.

Brehmer has advocated the use of local douches for the same purposes, but Dr. Pogaenik claims the following advantages for his method:—

1. Cold frictions may be persevered with in hæmoptysis when douches are impossible.
2. They are more agreeable to patients.

3. Their influence is more prolonged, and therefore more likely to be beneficial.

4. They are easily procured, even among the poor, and while travelling, whereas douches can only be obtained in institutions and large establishments.

5. The douche necessitates walking exercise after its use, which exactly reverses the desired effect on the body; for by this the lungs, which have been relieved by the cutaneous reaction, are brought again into full movement instead of remaining comparatively passive, as is desirable.—*London Med. Record*, Oct. 15, 1877.

The Use of Digitalis in Disease of the Aortic Valves.

Dr. J. MILNER FOTHERGILL, Assistant Physician to the West London Hospital, sums up (*British Med. Journal*, Oct. 13, 1877) the value of digitalis in aortic valvular disease.

1. Digitalis is useful in aortic stenosis. By exciting a more powerful ventricular contraction, it enables an equal bulk of blood to be driven through a narrowed orifice in an equal time, thus establishing a new equilibrium.

2. In the earlier stages of aortic regurgitation, with massive hypertrophy, it is harmful rather than useful.

3. In the later stages of aortic regurgitation, where the heart is failing from mural decay, and especially when intermitting, digitalis may be given with at least temporary advantage.

Complete Obliteration of the Aorta.

Dr. WICKHAM LEGG, at a late meeting of the Pathological Society of London (*Lancet*, Oct. 20, 1877), showed an example of complete obliteration of the aorta, at the usual site—viz., just in the neighbourhood of the ductus arteriosus. The subject of it was an adult who had died suddenly from rupture of a dissecting aneurism of the aorta into the pericardium. The vessel was completely obliterated for about a quarter of an inch just beyond the ductus arteriosus, which persisted as a ligamentous cord pervious for a short distance to a bristle. The circulation was carried on by the anastomoses between the internal mammary and other branches of the subclavian with the epigastric and intercostal vessels. Dr. Legg believed that as many as eighty such cases had been recorded, and he referred to the two existing theories as to the mode of origin of the constriction. The one view is that it depends upon some condition of the ductus arteriosus, and the case of a child is recorded in which a thrombus was found extending from the ductus into the aorta. The other view—that of Rokitsansky and Peacock—is that it is dependent rather upon an original vice of development, and Dr. Peacock had shown that it frequently went with other malformations, such as deficiency in the ventricular septum or the presence of only two aortic valves, as in the specimen exhibited.

Dr. COUPLAND mentioned a case recently in the Middlesex Hospital, under the care of Dr. Thompson, in which this condition was marked during life by extremely tortuous and dilated arteries in the scapular and interscapular regions, having the characters of cirroid aneurisms. In this case the occlusion was not quite complete, but the anastomoses were very abundant, the upper intercostal arteries being of great size and very tortuous. Dr. Coupland referred to a case related by Mr. Sydney Jones, in which the anastomoses were carefully dissected and described.

Mr. SYDNEY JONES said the preparation from that case, which he had brought before the Society twenty years ago (see *Transactions*, vol. iii. p. 159), was in the

museum of St. Thomas's Hospital. It occurred in a dissecting-room subject, a man of the age of forty-five, and he was enabled to make a complete dissection of it. In his paper he expressed concurrence in the view adopted by Dr. Craigie that "the obliterating action, which has taken place in the ductus arteriosus, has, from some cause or other, been prolonged within the aorta."

Mr. Wagstaffe asked Dr. Compland whether the physical signs were sufficient to render a diagnosis possible, to which the latter replied in the affirmative, adding that he believed the condition had been diagnosed. Dr. Legg said that Oppolzer had made the diagnosis in five or six cases, basing it chiefly upon the absence of an aortic pulse in the abdomen, and the presence of the anastomoses. Dr. Fagge reminded the members that Dr. Walshe had correctly diagnosed a similar case, laying stress upon peculiar murmurs in the back.

[The late Dr. Cammann, of New York, is said to have diagnosed a case eleven years before death, see Meigs's report of a case in the *Amer. Journ. of Med. Sci.*, Jan. 1869, p. 31.]

Treatment of Neurosis of the Stomach.

In the treatment of dysorexia, says Dr. H. LEBERT (*Archives Gén. de Med.*, June, 1877), in a memoir on Neurosis of the Stomach, the regulation of the diet is the essential point to be attended to. Whilst variety should be permitted, all indigestible and innutritious substances should be interdicted. In *bulimia* a little food may be given between the ordinary meals, as two or three bisenits soaked in sherry, and a cup of milk may be placed beside the bed at night, but no cooking should be allowed. Moral treatment, gentle but firm, is indispensable. In this condition M. Lebert has found opium or codeine in small doses, as one-sixth of a grain three or four times a day, most serviceable. Bromide of potassium is also useful in doses of five grains or more, or a drachm of the syrup; the same treatment is adapted for heterophagy. Where these means fail and the patient continues to eat improper substances, small quantities of tartar emetic should be surreptitiously added to them, that a cure may be effected by the vomiting induced. *Geophagy* has become a more rare affliction since the emancipation of slaves and the better food they have obtained, and it will, he thinks, disappear altogether. For its treatment repose, pure air, and a carefully augmented milk diet, are all that is needed. A little rum or good wine may be added if the patient be much exhausted; more solid food may alternately be had recourse to, and tonics may then be given, beginning with infusions of centaury, orange peel, calumba, and quassia, and passing on to quinia and chalybeates. In *gastralgia* not only the diet but the whole hygiene of the patient must be attended to; milk and farinaceous food, eggs, stewed meats, fish, young and tender vegetable food may be given, but the use of tea, coffee, wine, and brandy, unless in very small quantity, should be stopped. Cacao deprived of its fat can in general be taken, as may also small amounts of aerated waters; indigestible substances like legumes, fat meats, ham and pork, are as a rule very inappropriate. The exercise should be regular and moderate, and the advantage of moderation in amusements strongly impressed on the patient. Great benefit is sometimes derived from hydropathic treatment carried out with judgment. In regard to remedies, whilst none should be prescribed that are not absolutely necessary, it is expedient to have several resources against this frequently rebellious disease. We may commence with bismuth, small doses of nitrate of silver and bromide of potassium, and proceed to the preparations of zinc, to nux vomica, and arsenic. Bromide of potassium, which is not good in chronic catarrh of the stomach, is often very useful in pure gastralgia. The sulphate, or better still the lactate of iron, may be prescribed in doses of half to one grain several times a day. When the patient is troubled with

eructations they may be temporarily prevented by the administration of from fifteen to twenty grains of the bicarbonate of soda, but it soon loses its effect. M. Lebert has not seen much advantage accrue from the use of valerian, castor, or the fetid gum resins, though occasionally a combination of tincture of valerian with benzoated tincture of opium has proved effective. In regard to local means the hydropathic compress, either cold or allowed to remain as a poultice, is most useful. Local faradization sometimes removes the pain, and in rebellious cases a large flying blister may be applied to the epigastrium, with or without the subsequent administration of morphia in powder. Vomiting in gastralgia is usually slight and transient, but it should be treated with ice internally and effervescent drinks: opiate injections and poultices, over which a little tincture of opium has been sprinkled, may also be used. If the attack have been brought on by some imprudence in diet, the patient should be directed to drink abundantly of chamomile tea, and a small dose of apomorphine be injected under the skin to promote vomiting.—*Practitioner*, Aug. 1877.

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Case of Obstruction of the Bowels by a Dislocated Spleen.

Dr. VICTOR BABESIU, of Pesh (Allgem. Wiener Med. Zeitung, Sept. 1877), publishes a remarkable case of a woman, aged 30, who was admitted on the 10th of August with stercoraceous vomiting, and other symptoms of intestinal obstruction, which were quickly followed by collapse, and death occurred on the 13th. The spleen, which was not enlarged, lay in the left inguinal region, parallel to Poupart's ligament, and was adherent by bands of connective tissue to the groin, the rectum, the spinal column, the coils of the ileum, the great omentum, the sigmoid flexure, and to the brim of the pelvis, the uterus, and with the Fallopian tubes and ovaries on both sides. Its under surface formed with Douglas's space a cavity which was filled with ichor, and the walls of which were rotten, and covered with dirty brown false membranes. The gastro-splenic omentum was stretched into a cord about as thick as the little finger, seven centimetres long: the splenic vessels were obliterated. The spleen itself was gangrenous. A loop of jejunum was constricted between this ligamentous band and the spinal column.—*Lond. Med. Record*, Nov. 15, 1877.

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Localized Peritoneal Exudation which Perforated the Lung and Simulated Pyopneumothorax.

This case is recorded by PFAHL in the *Berliner Klinische Wochenschrift*, No. 5, 1877. A Polish maid-servant, aged 23, was admitted with all the signs of right-sided pyopneumothorax, with succussion-sounds and amphoric respiration. The previous history of the case was imperfect, and only the physical signs were available for the formation of a diagnosis. The *post-mortem* examination revealed the nature of the case. There had been a perforating duodenal ulcer, leading to abscess between the right lobe of the liver and the diaphragm. This had pushed up the diaphragm, displaced the heart to the left and *upwards*, and caused bulging of the right side of the chest. An adhesive diaphragmatic pleurisy had followed, and the abscess opened into the lung. Thoracentesis was performed in the fifth intercostal space, and after the evacuation of nearly two pints of pale yellow offensive fluid the respiration became troubled: and, in spite of free stimulation, the patient died in ten minutes after the conclusion of the operation.

[The aids obtained from the case towards the correct diagnosis in any similar one seem few indeed, but allusion is made to the fact that the heart was displaced *upwards*, whereas in pneumothorax it should be dragged downwards. It may be doubted whether this is a point which could be relied upon.

The author remarks upon the rarity of such cases, and mentions the only two cases in any way like his which he has been able to find on record. One is by Wurtrech in Virchow's *Handbuch der Speciellen Pathologie und Therapie* (Krankheiten der Respirations-Organen), the other by Sturges in the *Lancet*. He does not appear to be conversant with an article by Dr. Hilton Fagge in the *Guy's Hospital Reports*, vol. xix., 1874, entitled "Cases of Abscess within the Upper Part of the Abdomen." In that paper sixteen cases are collected, several of which opened into the lung or pleura. It appears, it is true, that only one gave any, and that but doubtful, evidence of pneumothorax; but, after all, that occurrence is but a side issue. Given an abscess between the diaphragm and liver, or spleen and diaphragm, and it is not unlikely to open into the chest, though it seems but rare that the abdominal are quite subordinate to the thoracic symptoms. This is the clinical fact of importance. It may or may not produce symptoms of pneumothorax.

Such cases have been but rarely recorded in medical literature, but that is probably, as Dr. Fagge remarks, because "their symptoms and course are so variable, and the publication of isolated instances might well appear likely to be of but little service in facilitating their recognition by other observers, or in gaining for them a place in scientific works on medicine." They have not been published, but they are not very rare. They more commonly result from external injury, or, as in Pfahl's case, by extension from disease in some neighbouring organ. The reporter is, however, inclined to add that whenever a general peritonitis leads to the production of much inflammatory effusion, whether it be lymph or pus, the fluid gravitates behind and above the liver and to other dependent parts, and may then become shut off by adhesions and produce a local abscess. The reporter has several times seen *post-mortem* evidence of a general peritonitis localizing itself in this way under the diaphragm, above the liver, once above the spleen.

Dr. Fagge refers to a very important point, viz., whether the prognosis in these cases is not really hopeful if they be recognized early, and the pus evacuated by aspiration; but enough has been done in alluding to his paper in its bearing on the present case, and it can be consulted by any one interested in the subject who is ignorant of or has forgotten its existence. In the same volume of *Reports* is also a paper by Dr. Frederick Taylor on the same subject. — *London Medical Record*, Oct. 15, 1877.

Iodic Purpura.

In a paper contributed to the *Revue Mensuelle de Med. et de Chir.*, Sept. 1877, Prof. A. FOURNIER, of the St. Louis Hospital, observes that while among the numerous and various phenomena which may follow the ingestion of iodide of potassium, there are some which are of common occurrence and well known, there are others which have either escaped attention, or have only been imperfectly described. Among these may be ranged, he believes, a cutaneous affection, consisting in the production of small miliary, non-pruriginous, sanguineous spots, proceeding after the manner of purpura, and to which he proposes to give the name of iodic purpura, or petechial iodism. That the appearance of the exanthem and the taking the iodide are not a mere coincidence, he concludes from the following observations: 1. In all the cases the purpura has appeared a very short time (from one to six days) after commencing the iodide. 2. In some of the patients the same purpuric eruption has been produced several times after each new administration of the iodide; and in three of these it occurred every time the medicine was used. Two cases are detailed, in which this was the case three or four times. 3. In another case, in which the purpura was produced on three successive occasions, it was found in all these that whenever the dose was

notably increased, a marked aggravation or additional production of the eruption ensued.

As to the characteristics of this eruption, in all the patients the well-known appearances of purpura, and the impossibility of effacing them by pressure with the finger, were distinctly present, the petechial colour due to extravasation being very obvious. The seat of the eruption, with one exception (when it was on the thorax, and that only), was in all the cases on the legs only, being always more confluent on their anterior than on their posterior part. It never descended to the foot or extended beyond the knee. This purpura seems to assume an eminently discrete form, few spots being usually observed, about a hundred of these on each limb constituting the maximum of confluence—fifty or sixty, or even less, being the number usually observed. On the successive appearances the purpuric spots are even yet fewer in number. This rarity of confluence, and the especial localization of the exanthem about the anterior tibial region, impart to this variety of purpuric affection a somewhat peculiar physiognomy of its own. It is always a miliary purpura, that is, a petechial eruption of the smallest extent, resembling in size a millet-seed, the head of a pin, or at most, and that rarely, a grain of corn or a small lentil. The spots are usually of a regular rounded form, and less often oval or irregular in form and notched. The eruption never advances beyond this petechial and miliary condition. The spots are quite level with the skin, seemingly incorporated with the integument, the appearance of which they only modify by their bright colour. Like as in purpura vulgaris, these spots give rise to neither local nor constitutional disturbance, inducing neither heat, pain, nor pruritus. Thus there is a great chance of this eruption passing unperceived; and it is always by accident that the patients have observed its existence, while undressing, at the bath, etc., so that many cases have no doubt escaped the notice of patients and their attendants. The eruption comes on at an early period of the iodide treatment, and has completed its course in two or three days, at the end of which period it ceases to increase in confluence, even when the use of the medicine is continued. It remains for a certain time in the condition of purpurine petechiae, after which the spots undergo the ordinary changes of colour observed in cutaneous hemorrhages, finally disappearing at the end of two or three weeks. When, under the influence of a large dose of the iodide, a new purpuric outbreak is produced, the intruding eruption is easily distinguished from that which has preceded it by the bright purpurine colour of its spots, contrasting with the faded condition of the prior spots. It has a curious appearance, this intermixture in the same locality of petechiae of different ages, with differences of colour corresponding to the periods of their appearance.

This purpura is certainly a rare accident, or rather phenomenon, for there are few remedies which are more employed than the iodide of potassium; and if iodidic purpura were not almost an exceptional occurrence, it must have attracted the attention of observers. Professor Fournier, who, during the few years since he first became aware of its existence, has carefully sought for it, has not met with more than some fifteen cases. It would be premature, with so small a number of facts, to define the conditions which may act as predisposing or occasional causes of its production; but some etiological data may, perhaps, be derived from the cases already observed. *A priori* one would be inclined to believe that a predisposing and adjuvatory cause would be found either in the impoverished, anæmic, or debilitated condition of the patients, or in some of the graver forms of syphilis. This is far from being the case. All the subjects of the affection hitherto met with enjoyed either a flourishing or a medium condition of health; and although some of these seemed affected with a certain degree of "lymphatism," none could be said to suffer from anæmia or scrofula, and none had pre-

sented anterior hemorrhagic proclivities. Any of these who were the subjects of syphilis exhibited only benign or medium forms of this; two-thirds of the cases being exempt from any specific manifestation of this disease at the time when the iodide, which in fact was only administered as a preventive, produced the purpuric eruption. Further, in a negative point of view, neither sex, age, occupation, nor external temperature seemed to have exerted any influence. Nor can the eruption be attributed to excess of dose, since most of these patients had not taken more than fifteen grains of the iodide when the eruption had manifested itself. Still, quantity is not a matter of indifference, for when a given dose has been followed by purpura, a kind of tolerance of the remedy seems to be established, and no further manifestation ensues. But let the dose be much increased—doubled, for example—and a new outbreak of purpura may be immediately produced, although this is less confluent and less important than that which preceded it. But it is probably the *individual predisposition* which predominates over all the etiology, for however unknown and impenetrable in their nature, the existence of idiosyncrasies in regard to the action of certain remedies and articles of diet is beyond doubt. Iodic purpura in its nature takes its place in the group of affections termed by M. Bazin *protopus indirectes* or *pathogénétiques*. It is a medicinal eruption, which ranges nosologically with the roseola from copaiba, the erythema from belladonna, the exanthems from arsenic, the acne from iodine, etc.—*Med. Times and Gaz.*, Oct. 20, 1877.

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Molluscum Contagiosum.

KAPSI (*Archiv für Dermatologie und Syphilis*, 3 Heft, 1877) proposes that the molluscum contagiosum of Bateman shall be known as molluscum atheromatousum, to distinguish it from the molluscum contagiosum of modern authors which, from its wart-like appearance, is known as molluscum verrucosum. These varieties are essentially the same anatomically, both being affections of the sebaceous glands. In molluscum atheromatousum the gland itself is chiefly affected; in molluscum verrucosum the morbid changes begin in the ducts and lanugo hair-follicles, from which they extend to the glands.

The “molluscum corpuscles” of authors are epithelial cells with altered cell-contents.

Kapisi does not believe that the disease is contagious, and proposes that the term contagiosum should be no longer used.—*Lond. Med. Record*, Nov. 15, 1877.

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Lichen Ruber Acuminatus and Lichen Ruber Planus.

KAPSI (*Wiener Medizinische Wochenschrift*, No. 35, 1877) remarks that English and American writers, in substituting the name lichen planus for lichen ruber, confound two distinct forms of the disease. In that originally described by Hebra the characteristic papules are red, pointed, conical, and have scales. They do not occur in groups. There is another form, which has been described by English-writing dermatologists, and which Kapisi infers they have alone observed. In it the papules are flattened, do not scale, and have a tendency to form groups or plaques. For this latter form the author recommends the exclusive use of the term lichen ruber planus; for the former, lichen ruber acuminatus. The distinction, he observes, is recognized by Hebra. The author gives details of cases of lichen ruber planus observed in Vienna, and also remarks that in some of the cases intermediate forms are observed, both varieties being in one instance found on different parts of the same patient. In both varieties the disease yields to arsenic.—*London Med. Record*, Nov. 15, 1877.

On Zoster Recidivus.

KAPOSI gives (*Wiener Medizinische Wochenschrift*, Nos. 25 and 26, 1877) a further report of a remarkable case of zoster to which he first called attention in the same journal in 1874. The patient, a woman aged 42 at the time of her first attack, has had now nine relapses of herpes zoster. The case began as one of herpes zoster cervico-brachialis gangranosus dexter. The first relapse was on the same part, but also in the region of the fourth and fifth ribs. The third and fourth attacks were limited to the forearm and lower part of the arm. The fifth extended over the shoulder and neck, between the seventh cervical and second dorsal vertebrae, and also over the anterior pectoral region over the fifth and sixth ribs. All these eruptions were on the right side, and, with the exception of patches over the left scapula during the first attack, and on the region between the third and sixth ribs during this and the fifth outbreaks, in the same nerve-territory, that, namely, of the right cervico-brachial plexus. The subsequent attacks were on parts supplied by other nerves. The sixth was a zoster lumbosacro-cranialis of the right side; the seventh, eighth, and ninth zoster cervico-brachialis of the left side. Each attack ran the ordinary course of herpes zoster. The author speculates on the probability of the phenomena in this singular case being produced by a vascular tumour of the spinal cord.—*London Med. Record*, Nov. 15, 1877.

Acetic Acid in Psoriasis.

DR. JANSEN (*Revue Médicale*) finds acetic acid the most effectual application. After a bath of hot water and soap to soften the crusts, the scales are to be removed by a small brush. The acid is then applied by means of a sponge. Very soon the affected parts become pale, then injected, and finally slightly inflamed. There is a feeling of smarting, which lasts half an hour. The crusts fall off, and in some cases appear no more after the fifth or sixth application; in others they reproduce themselves for a longer time, gradually becoming less and less thick. Only one application in the twenty-four hours should be made, and the parts carefully bandaged.—*Lond. Med. Record*, Nov. 15, 1877.

On Cysticerci in the Skin.

GUTTMANN (*Berliner Klinische Wochenschrift*, No. 26, 1877) reports a case of this nature. He remarks that hitherto only sixteen cases have been published in which cysterci have been found in the skin during life, only one being reported from Austria and none from England.

His patient, a tailor 63 years old, first observed at Christmas, 1876, that there were a number of small tumours under his skin. They produced no symptoms, and were discovered accidentally. When seen in February, 1877, 20 of these small tumours were counted, and a few weeks later 30. They were found chiefly on the back, then the chest, neck, arms, abdomen, and right gluteal region. They lay immediately under the skin, which was slightly raised by the larger of them, were movable, felt tense and elastic, were of almost cartilaginous hardness, painless on pressure; they were chiefly round, but some were elongated, and were of the size of a cherry-stone or small hazelnut. They were examined microscopically. The mode of infection was not ascertained.—*London Med. Record*, Nov. 15, 1877.

On Oedema and the Lymph-stream in Inflammation.

DR. O. LASSAR (*Virchow's Archiv*, March, 1877) gives an account of his experimental researches on this subject. He produced inflammation in the hinder extremity of dogs by injecting a 20 per cent. emulsion of petroleum or oil of tur-

pentine. One injection causes an abscess; repeated injections cause diffuse supuration. Or he used Cohnheim's method of ligaturing the limb, and leaving it for five or six minutes in water, heated to 50° or 54° Cent. (122° or 129° F.). The animals were all large, strong, young dogs, and were curarised, respiration being kept up artificially. It is essential that the animals should be at absolute rest, on account of the influence of muscular movements on the lymph-current.

From the lymphatics of the hind leg of a dog, under normal circumstances, a scanty drop exudes about every ten minutes, and only with great difficulty can a cubic centimetre be collected. But in inflammation a large quantity comes spontaneously, and by passive movements 20 to 30, or even 40 cubic centimetres, may be obtained very quickly. The lymphatic glands become swollen and red, and under the microscope were seen to be filled with fine oil-globules, when the inflammation was induced by the injection of emulsion. He considers whether the increased quantity of lymph is due to an increase in the current, or to the pressure of the exudation, and shows that the quantity of lymph begins to augment as soon as the inflammation begins, or rather as soon as the irritative means have been employed. Emminghaus showed that ligature of a vein was followed by rise in the outflow of lymph, and that slackening the ligature was followed by a return to the physiological condition; so that a great uniformity exists, so far as concerns the lymph-stream, whether the oedema is caused by inflammation or by obstruction. But the mechanism in the two cases must differ, for, as Arnold has shown, the enormous increase of capillary pressure present in obstruction does not occur in inflammation, and many characteristic differences between inflammatory and obstructive oedema prove that in inflammation chemical and morphological conditions affect the bloodvessels in quite a different way from the mechanical damming up of the circulation. If the sciatic nerve be cut, and the limb so ligatured that the digital arteries still pulsate, in 24 hours the foot will become cedematous. The lymph in this case is thin, slightly tinged red, imperfectly coagulating. The cellular elements are almost exclusively red corpuscles, with a few white ones almost lost amongst them; the fibrin is almost at a minimum, and is less than the normal percentage in dog's lymph. Inflammatory lymph, on the other hand, is a yellowish, rather opalescent thick fluid, which coagulates as soon as discharged, often within the cannula, and contains only a few red, but a great quantity of white corpuscles. The dried residue exceeds that of normal lymph noticeably, and that of obstruction lymph many times. Section of the sciatic nerve remained without any definite influence on the quality or quantity of inflammatory lymph. The entire residue of inflammatory lymph was quite twice as much as that of obstruction lymph; but the difference of the ash was not so great. In experiments on the head and neck, he found no very great difference in the lymph-stream on the sound and the affected sides, and he infers that communications exist between the two sides. The inflammatory lymph presented its characteristic conditions as well before as after passage through the lymphatic glands. The concentration of the fluid increased with the duration of the inflammation. Since A. Schmidt showed the importance of the white blood-corpuscles in the formation of coagula, it has been recognized that a plasma increases in coagulability in proportion to its richness in colourless elements. This held good of the inflammatory lymph, so that in very diffuse inflammation it formed a lining of coagulum in the lymphatic vessels themselves, which became stiff and inelastic. In gangrenous inflammation the lymph-stream completely dried up. All the characters of the inflammatory exudate, in his opinion, tell against Arnold's hypothesis of pre-existing stomata in the walls of the vessels, or why do such different elements pass through in obstruction and in inflammation? He remarks that it is possible to diagnose the inflammatory or obstructive origin of an exuded fluid, provided the blood is not

hydramic. Participation of the lymphatic glands in the inflammatory process appears to be of slight influence on the lymph-stream. Electrical irritation of the glands had no influence on the nature of the lymph-stream, except that it mechanically caused an outflow of their accumulated lymph. The whole of the dried residue of the lymph in these experiments was preserved and the ash analyzed. 1000 parts of inflammatory lymph contained 137.67 parts of ash; 1000 parts of obstruction lymph contained 112.83 parts. The following table gives the results of the analysis of 100 parts of the ash of each:—

	<i>Inflammation.</i>	<i>Obstruction.</i>
Chloride of sodium	76.086	74.429
Potassium	5.987	2.155
Sodium	3.214	3.574

The chloride of sodium appears constant in both kinds, but the potassium and sodium appear to bear a relation to the concentration of the lymph.—*London Med. Record*, August 15, 1877.

SURGERY.

On the Treatment of Ranula.

Dr. PANAS (*Bordeaux Medical*, July 31) has frequently succeeded in curing ranula by the injection into the tumour of from four to ten drops of a concentrated solution of chloride of zinc. Among others, he cites one obstinate case in which excision, seton, and drainage had successively failed; the contents of the cyst were always reproduced, and finally operative interference was abandoned, except when attacks of suffocation rendered palliative puncture necessary. Ten drops of a solution of chloride of zinc, of the strength of one to ten, were injected without previous evacuation of the cyst; and, shortly afterwards, the injection was repeated with a 20 per cent. solution. In less than five weeks from the time this treatment was begun, a complete cure had been produced. This treatment is applicable to all varieties of mucous and serous cysts. It has succeeded in a case of subhyoid cyst, which had resisted cauterization and the injection of tincture of iodine; it yielded to a single injection of chloride of zinc.—*London Med. Record*, Nov. 15, 1877.

Extirpation of the Larynx.

The possibility of removing with success a part or the whole of the larynx seems to have been first hinted at by Kæberlé in 1856.¹ In 1870 Czerny made experimental observations on dogs, which proved that the operation could be successfully done. These experiments were turned to account by Billroth, who in 1873 performed the first excision of the human larynx. Operating for cancer of the larynx, Billroth had the satisfaction of dismissing the patient two months after the operation, cured, and able to speak clearly, though monotonously, by means of the ingenious artificial larynx now known as Gussenbauer's tube. After Billroth, various continental surgeons have performed excision of the larynx for malignant growths; and at present there are on record ten cases of this operation. The following case is believed to be the first in which it has been resorted to in Great Britain:—

In April, 1876, J. H., aged twenty-eight, consulted Dr. DAVID FOULIS, at

¹ See Paul Berger in Hayem's *Revue des Sciences Médicales*, t. ix., part i., p. 298.

the Glasgow Throat Dispensary, on account of hoarseness. With the laryngoscope, a warty-looking growth could be clearly seen projecting under the anterior end of the left vocal cord. The growth was of the size of a green pea; its colour was a pale grayish-pink. The vocal cords and larynx otherwise were normal. In phonation the cords closed over the growth, hiding it from view. On closer examination, it was apparent that the growth was of a soft consistence, and that it was sessile on a pretty broad base, the base being on the sloping under-surface of the left vocal cord at its anterior end. The growth was removed by external incision, and proved to be a papilloma.

In October, 1876, it was found that a nodule had reappeared on the old site, and was growing steadily. On April 16, 1877, thyrotomy was performed; the two halves of the larynx were held aside, and the growth was clipped out with scissors, and its seat cauterized. In July the growth had again reappeared in the old site, and a month later it was larger than ever before, filling nearly the whole lumen of the air-tube. In reporting the case, Dr. Foulis says: "I felt that it would not be right to attempt any mere excision of the growth in view of the recurrence after the thorough removal and cauterization at the thyrotomy operation. With this the patient was quite in accord; and when I proposed to him the removal of the larynx, he, after some hesitation, agreed to have it done, chiefly because of the lingering death which was in prospect, and on the ground that if an operation for the introduction of a tube into the trachea must be undertaken in order to avert death by suffocation, it might be as well at the same time to remove the diseased and useless larynx, and replace it by an artificial one.

On September 16 Dr. Foulis removed the larynx in the following manner: "My incision began at the lower edge of the hyoid bone, and ran down the middle line to about an inch below the cricoid cartilage. A small piece of lint was applied to the fistula to prevent blood from entering the air-passage. The soft tissues were next dissected carefully off from the laryngeal cartilages back to the pharynx, first on one side and then on the other, and any small vessels which bled were ligatured. There was not much bleeding, and by simply waiting for the oozing to stop a clear field was secured for the final steps. The upper end of the trachea was cleared, pulled forward with hooks, and divided at the first ring. I incised lightly the mucous membrane at the back of the trachea transversely, and introduced a leaden tube, curved like a siphon, with an India-rubber ring round the end in the trachea, which it thus closely fitted. This curved tube completely answered the purpose of preventing the escape of blood into the trachea, and also of allowing respiration to proceed from a point which was away from the field of operation. The cartilaginous box of the larynx was then pulled forward with a sharp hook, and freed from its attachments at the upper end and behind. I at first intended to leave the upper margin of the thyroid cartilage to form an arch which might prevent the wound from collapsing and cicatrizing too closely. But it was found that an extension of the growth had taken place upwards along the scar of the thyrotomy operation, and this necessitated the removal of the whole front part of the thyroid cartilage. The superior cornua of this cartilage were left, as well as half of the arytenoid cartilages, these parts being well out of the area of the disease. The edge of the trachea was fixed to the skin on either side by two long wire sutures passed deeply into the tissues. No other sutures or dressings were used. The ordinary tracheotomy tube, being much too small to prevent fluids entering the trachea, I left in the leaden siphon-tube for the first twelve hours. Thereafter larger tubes of gutta serena, and finally of vulcanite, were procured, which, completely filling the trachea, prevented anything but air from getting into it."

The operation lasted two hours and a half, and recovery took place uninter-

rupted by any serious accident. Five days after the operation the patient could swallow liquids freely; a month later the wound had contracted to the size at which it is desired to keep it, and a Gussenbauer's voice apparatus is being moulded to it.

Examination of the parts removed showed that the tumour on the under surface of the left vocal cord had not enlarged its base downward, but that it formed a pendulous mass hanging into the trachea as far down as the first ring. It filled the trachea in such a manner as to excite surprise at the possibility of the patient breathing, hardly a chink remaining of the lumen of the air-tube. From the upper part of the tumour an extension took place upwards, like a soft, pale, grayish-red fringe, along the line of the thyrotomy incision. This part of the growth had the structure of spindle-celled sarcoma.

The *prognosis* in this case is decidedly darkened by the fact of this extension upwards having taken place. Of the ten cases in which the operation of excision of the larynx has been performed, six cases are reported to have ended fatally. Of these fatal cases two were due to the return of the disease at three and six months respectively after the operation. Time alone can show whether my case is to be ranked with these. Two more of the fatal cases succumbed to pneumonia at four and fourteen days respectively after the operation. In another case gangrene of the lung carried off the patient at the fourth day. In the last of the fatal cases the issue was due to collapse on the sixth day (from shock, insufficient food, and imperfect protection of the trachea from introduction of blood and secretions). Of the remaining four cases of excision, one was a very partial operation for stricture in syphilitic disease, the patient dying eleven months afterwards from the constitutional affection. In two cases the reports are defective, and the ultimate issue cannot be stated. Lastly, the case published by Prof. Bottini is the only one on record in which six months after total excision of the larynx the patient was in a quite satisfactory state.

As to the *steps of the operation*, these must be of course determined in each case by the nature of the disease. The simplest plan is that which I followed before having had access to the accounts of the cases above noted. A single vertical median incision from the hyoid bone to the second ring of the trachea exposes the front of the larynx. The two sides of the cartilaginous box are then freed from the muscles quite back to the gullet. Up to this point the larynx is not opened, and no blood can escape into it. The larynx is then separated from the trachea by a transverse cut, the trachea having been previously transfixed and held forwards with a sharp hook. A large siphon tube of vulcanite, fitting the trachea, is put in, to keep out the blood, and permit free respiration. If this is neatly and carefully done, there is no need of preliminary tracheotomy and use of Trendelenburg's tampon, which has the disadvantage of largely increasing the length of the wound, while in Billroth's case, at all events, it was not found to facilitate matters to any extent. If there is much oozing of blood, something may be gained by adopting Rose's plan of lowering the head of the patient so that the flow of blood is in the direction away from the trachea. The upper and posterior attachments of the larynx are next cut, care being taken, in separating the gullet and pharynx, to keep the edge of the knife close to the cartilages, so as to avoid button-holing the gullet. It might be well to mop the raw surface out with solution of chloride of zinc (thirty grains to the ounce) at the close of the operation; but it is not advisable to irrigate the wound in any way afterwards, on account of the gulping and irritation which it sets up. Much may be done by keeping the air of the room pure and disinfected. The tracheal tubes should be as large as the trachea will admit, and are best made of hard polished vulcanite. When oiled inside and outside with carbolized oil, they are easily changed, and

remain clean for a considerable time. The last feature in the treatment is the introduction of Gussenbauer's artificial vocal apparatus. This must be delayed, however, until the wound is fairly healed and contracted, before which time the apparatus is useless from its small size.—*Lancet*, Oct. 13, 1877.

Gastroraphy.

In the thirty-eighth number of the *Wiener Medizinische Wochenschrift*, 1877, Professor BILLKOTH reports the further treatment in a case of external gastric fistula, that had been previously described by Dr. A. Wöfler in the *Archiv für Klinische Chirurgie*, Bd. 20, page 577. This case was one of a gastric fistula, involving the abdominal wall, in a female aged 25 years. The condition in question had resulted from a chronic abscess over the lower ribs, which, after adhesion of the stomach to the diaphragm and the anterior wall of the abdomen, had perforated this viscus, and, at the same time, discharged its contents externally. Professor Billroth at first closed the orifice, which was of the size of a silver guilder piece, by a granulating flap. This was done with the expectation that the flap would still resist the digestive action of the gastric juice, after the granulating and vascular surface, directed towards the interior of the stomach, had, in course of time, acquired an epithelial covering, and a cicatricial and consequently less vascular condition. This expectation was based on the fact that one occasionally meets with in the stomach as results of gastric ulcer, large cicatrices, ulcers which are depressed below the surface of the mucous membrane, and contain much finer and smaller vessels. This supposition, however, was not confirmed. About three months after the operation the fistula opened again, and to the same extent as previously, in consequence of digestion of the flap of skin by which its orifice had been covered. At the period of her re-admission into the Vienna Hospital, the patient was wearing a small plug, retained by a broad bandage. This closed the orifice of the fistula very well, and prevented any flow of the contents of the stomach whilst the patient was recumbent. It was found impossible, however, to prevent a continuous discharge of gastric fluids while she was standing and at work. The patient had lost flesh; the margins of the external orifice of the fistula were constantly inflamed and tender; and the general condition had become so intolerable, that there was an eager desire for some other attempt to bring about complete healing, even though this might be attended with some risk.

The first two attempts to bring about occlusion, or, at least, considerable contraction of the fistulous orifice, proved unsuccessful. In one, it was sought to produce obliteration by converting, through cauterization, the mucous surfaces of the fistula into a cone of cicatricial tissue. In the other, the mucous membrane was separated from the muscular layer of the gastric wall at the seat of the fistula, and this latter layer, together with the serous, was dissected away from the abdominal wall for about the extent from the margin of the fistula, an attempt being made during the cicatrization of the superficial parts to thrust inwards towards the cavity of the stomach the detached flap of mucous membrane. The cause of the failure in each of these proceedings is stated to have been the extensive adhesion of the surface of the stomach to the anterior abdominal wall. In a third operation the orifice of the fistula was covered by a large flap, taken from the front of the thorax; the lower margin of this flap being fixed by sutures to the vivified lower margin of the orifice. This proceeding also failed, in consequence of almost complete destruction of the flap, through the digestive action of the gastric juice.

Professor Billroth finally performed the following operation for gastroraphy. After the stomach had been thoroughly cleansed by repeated injections of water, the adherent mucous and other coats of this viscus were, by means of the finger

and a raspatory, separated from the inner surface of the anterior wall of the abdomen. The adhesions were very extensive, and so firm as to necessitate for this breaking down considerable force. After this proceeding, the stomach could be drawn forwards to such an extent that it was possible, by means of fine silk sutures passed through the serous and muscular coats, to bring the margins of the abnormal gastric opening together. The orifice in the skin was then closed by a single flap, taken from the healthy parts below the fistula. The operation was performed under the carbolic acid spray, and the normal flap and raw surface were covered by Lister's dressings. During the first three days the patient was allowed to take water only, and during the following eight days, only milk, in quantities small at first, and gradually increased. Subsequently to the completion of the operation, no food nor a single drop of fluid passed through the fistula. The gastric wound healed speedily, and the skin-flap united almost by primary intention. No particular phenomena were noticed. Six weeks after the operation the patient was completely cured, and in a very good condition as to general health and nutrition.—*London Med. Record*, Nov. 15, 1877.

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Extirpation of Spleen for Rapid Hypertrophy.

Mr. H. L. BROWNE, Surgeon to the West Bromwich District Hospital, records (*Lancet*, Sept. 1, 1877) the following case of extirpation of the spleen:—

Edmund W., aged twenty, brass finisher, was in good health until about six months, when he began to get fat. A month after that had swelling of the leg (left), which prevented him from working. He had to lay up in bed. The swelling in the left leg went down, but the abdominal had increased, with more or less variation, up to the present time. He had never suffered from fever or ague; had no history of injury to the side. Had been several voyages to America, and had not suffered from sea-sickness. No personal or family history of syphilis. Now was in bed with great swelling of the abdomen. Both legs anasarous. Abdomen uniformly dull on percussion, with the exception of the right flank, which was slightly resonant when he turned on his left side. Heart displaced, the apex being level with the aortic valves; its sounds weak but normal. Breathing intensely laboured; lungs apparently healthy; haggard appearance; no albuminuria; fluctuation very distinct through abdominal walls.

Under the use of purgatives and diuretics it was noted, five days later, that the fluctuation was absent from the abdomen, which was found to be dull in any position on the left side of the median line, and to have a less marked line of dullness running irregularly down from the sternum to the pubes, two inches to the right of the median line. The fingers could be passed from the right side under the thin edge of a firm tumour, which was found to occupy most of the abdominal cavity, and in which there was a large deep notch, marking it evidently as splenic.

During the succeeding month the symptoms grew worse, and dullness extended towards the right side. In one week the tumour grew two inches at its lower borders, and the pain was intense.

The spleen was excised on February 23d. There were no adhesions, nor any pedicle of a distinct kind. Four very large arteries were met with, one after the other, as the spleen was slowly raised out of the abdomen; these were secured by double ligature before division, and also their veins. There was no hemorrhage. The lad rallied very well from the chloroform, but five hours afterwards died suddenly. There was no hemorrhage after the operation. The tumour, which was found to be a simple hypertrophy of the spleen, was eighteen and a half pounds in weight.

As to the cause of the hypertrophy I can offer no remark; it must be purely

speculative. The lad had leucocythæmia. There were no other glandular affections. The youth of the patient, the almost certainty of a splenic tumour being non-malignant, the absence of other disease, and the fact that the patient was dying, and would have died in a few days, from the pressure alone on the blood-vessels and viscera by the weight of the tumour—these are some of the strongest reasons why the operation was, and should be, performed.

Two Peculiar Varieties of Hydrocele of the Cord.

MR. FURNEAUX JORDAN read, at a late meeting of the Royal Medical and Chirurgical Society (*British Med. Journ.*, Oct. 13, 1877), an interesting paper with the above title. He referred to the origin of hydroceles of the cord. He considered them due to an imperfect obliteration of the peritoneal prolongation which took place along the cord from the internal inguinal ring to a point a little above the testis. This obliteration began at two points, at the ring and near the testis; and, if it were incomplete, fluid might collect in the unobliterated space, forming a spherical enlargement, which was movable from the testis. Transparency was present, but was distinguished with difficulty, unless in the lithotomy position. The disease was most frequent in early life, and was called "encysted hydrocele of the cord," probably to distinguish it from the so-called "diffused" variety. Of the two peculiar varieties now referred to, the first was a so-called encysted hydrocele of the cord, connected with the abdominal cavity by a long fine tube; the second was an encysted hydrocele of the cord with a fine tubular prolongation upwards, which ceased near the external ring, not connected with the abdomen. The point of interest in the first case was the communication of the hydrocele with the abdominal cavity by means of a fine tube of unobliterated serous membrane; in the second, the existence of a tubular prolongation running upwards, but ending in a blind extremity outside the inguinal ring. In the first case, a truss was applied: in the second case, acupuncture was resorted to, and proved successful after two or three repetitions. The globular collection or fluid, with the neck-like prolongation, suggested for it the name of "water-bottle hydrocele of the cord."

Treatment of Blennorrhagic Epididymitis with Iodoform Ointment.

DR. ALVARES, of Palma, in Majorca, has treated four cases of epididymitis with iodoform ointment, and from his experience in those cases draws the following conclusions:—

1. Iodoform relieves the pain of blennorrhagic orchitis better than any other application; this result is obtained at the end of one or two hours.
2. Iodoform exerts a very manifest resolvent action, and has the advantage over mercurial ointment, of causing no disturbance when absorbed.
3. The iodoform treatment shortens very appreciably the duration of the orchitis, and prevents any consecutive induration of the organ.
4. The ointment used should contain, according to the intensity of the inflammation, from one to two grammes of iodoform to thirty grammes of lard.—*London Med. Record*, Nov. 15, 1877.

Carbolized Catgut Ligature.

At a late meeting of the Clinical Society of London (*Lancet*, Oct. 20, 1877), MR. BRYANT exhibited specimens and drawings of arteries from four cases of Ligature with Carbolized Catgut. The first preparation was from a man twenty-nine years of age, who died from heart disease fourteen hours after ligature of the external iliac for an aneurism of the right common femoral artery. The ligature

used was of medium size, and no more force was employed than was necessary to secure the vessel. At the autopsy the internal and middle coats of the vessel were found to have been divided, whilst the external also was partly divided, some clots being found both above and below, and the catgut intact. The second preparation and drawing showed the right common carotid artery, to which a ligature had been applied twelve days before death, in a man fifty-eight years of age, for a supposed aneurism of the aorta and innominate artery. The operation was performed on the 16th of January, 1877, with carbolized catgut. It was followed by considerable relief of the pain, but the patient died from exhaustion on January 28. The artery was found to have been completely divided as to all its coats, and there was a firm clot both above and below the seat of ligature. The ligature itself had entirely disappeared. The third preparation was from the right subclavian artery of a man thirty-six years of age, who was admitted into hospital suffering from a ruptured traumatic axillary aneurism. He died from pulmonary complications on the thirteenth day from the operation. There was no suppuration about the operation wound; the subclavian artery and vein were normal. A small firm clot existed for half an inch above and a similar distance below the point of ligature. All the coats of the vessel were divided completely, and only the knot of the ligature remained. The fourth specimen was from the common femoral of a young woman, twenty-three years of age, in whom the artery was ligatured for elephantiasis Arabum. She died on the nineteenth day from the effects of gangrene of the leg. All the coats of the vessel were completely divided and repaired, there were good clots above and below the seat of ligature, and a small knot was found attached to the artery. Thus, in all four cases, the inner and middle coats of the artery were found to be divided, and in one case the outer coat also. The complete division was, no doubt, the result of secondary ulceration. In its primary effects, therefore, Mr. Bryant remarked, the carbolized catgut ligature acted as an ordinary ligature, and caused also a more or less complete secondary ulcerative action. He had ligatured ten other large arteries in their continuity—five femoral, four external iliac, and one subclavian. One case died on the tenth day. In one femoral the wound united without any suppuration, and the patient did not know that any cutting operation had been performed until he saw the scar on the seventh day, so slight was the reaction. In none of the cases did he use the spray, but dressed with dry lint or water dressing. One case died on the fourteenth day of pyæmia and heart disease. Secondary hemorrhage occurred in two cases; in one of subclavian it was slight, and the wound healed on the twenty-third day. In one out of four of external iliac there was some slight secondary hemorrhage on the twenty-ninth day. Whilst he could not agree with the views enunciated by Professor Lister as to the mode of action of the catgut ligature, his conclusion was that it is the best which we have at our disposal.—Mr. CALLENDER inquired as to the date at which the secondary hemorrhage occurred in the two cases mentioned.—Mr. BRYANT, in reply, stated that it was on the fourth and the twenty-ninth days respectively.—Mr. MAUNDER observed that Mr. Lister advocated the use of carbolized silk nine or ten years ago, and he had used it with good results; then he substituted catgut. He himself had had nine cases of the operation with carbolized ligatures, only five with catgut. So far as his own experience had gone, the use of the carbolized catgut had been attended with good results. One femoral case healed with no suppuration, another suppurated freely. But the experience of others had not been so satisfactory, and in some cases the results had been disastrous. Such cases as those of Mr. T. Smith, Mr. Callender, and others, and that of Mr. Spence, in which the catgut dissolved very speedily, led him to the conclusion that the femoral should not be tied with the catgut. He

himself would never use catgut again, seeing that it involved risks peculiar to itself, and never associated with silk.—Mr. BARWELL said that his experience, derived from the ligature in five cases with catgut, led him to agree with Mr. Bryant, for no accident had resulted in any case. It was a mistake to use too much force in tying the ligature, and the ends should not be cut too short. The condition of the catgut was also of importance: if left too long in the carbolized oil it became brittle. He believed that the secondary hemorrhage in femoral cases was from the vein and not from the artery.—Mr. SYDNEY JONES inquired as to the age of the patient in whom the carotid was ligatured, and the condition of the vessels. As to the time of absorption of carbolized catgut ligature, he thought it was slow, for he had found that after tying small vessels with such ligature in excision of the breast the sinuses remained long open. Mr. BRYANT, in reply, stated that the patient was twenty-nine years of age, and the arteries very healthy. In one case the knot of the ligature was found adherent on the nineteenth day, in the other on the fourteenth. He believed that the catgut ligature divided the coats in the same way as any other ligature, whipcord or silk, but that secondary ulceration did not necessarily occur, and this was an advantage. He agreed with Mr. Barwell as to the importance of not drawing the ligature too tight.—Mr. CALLENDER stated that each of the cases in St. Bartholomew's was a case of aneurism, in which the vessels were ligatured in their continuity for the cure of the aneurism. In each of three cases the ligature appeared to give way in a few hours, and pulsation recurred in the aneurism.

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Aneurism of Aorta, Innominate, Subclavian, and Carotid Arteries successfully treated by Double Distal Ligature.

At a meeting of the Royal Medical and Chirurgical Society held November 13, 1877 (*Lancet*, November 17, 1877), Mr. RICHARD BARWELL reported the following extremely interesting case in which aneurism was successfully treated by ligation of the subclavian and carotid arteries.

R. W——, aged forty-five, was admitted into Charing-Cross Hospital under the care of Dr. Pollock, July 24th, 1877, with a large aneurism at the right root of the neck. The man has served both in India and the Crimea, and is now a labourer in a foundry (the work requiring strenuous efforts). He has not had syphilis; the family history is remarkably healthy. In November, 1876, he had vomiting and purging after a drinking bout, followed by rheumatoid pains in shoulders and limbs; these disappeared after a time, but not from the right arm. He first noticed a swelling on the neck during March, 1877; his right arm became weaker and was occasionally numb. The tumour is oval, just above the right clavicle, it stretches from beneath the inner margin of the left nearly to the outer margin of the right sterno-mastoid, and upward to the lower margin of the thyroid cartilage; its projection is considerable, and its strong pulsation characteristically expansile. Dulness prevails from the inner third of the clavicle over the first intercostal space and second rib, and mingles with the cardiac dulness; over this space pulsation may be felt. The heart is displaced to the left, its apex beating fully half an inch outside the nipple line; strong epigastric pulsation would indicate some cardiac displacement downward. The veins of the right side of the neck and chest, and of the arm, are greatly distended. No bruit at the heart or over the tumour, and there is no perceptible difference between the two radial pulses. Dr. Pollock treated the case with rest, low diet, digitalis, and ice-bags to the tumour, but the aneurism increased. Deligation was then proposed, but the patient, after consideration, declined, and left the hospital. However, he returned under Mr. Barwell's care on the 13th August, desiring to have the ope-

ration performed. In the mean time the cervical tumour had much increased, and was more prominent: it measured horizontally between the limits of pulsation, by compass, $4\frac{1}{2}$ inches, by tape just over 6 inches; perpendicularly it extended from the clavicle to above the middle of the thyroid cartilage, measuring by compass 3 inches, by tape $3\frac{1}{2}$ inches; the thoracic dulness and pulsation reached as far as the middle of the clavicle; the displacement of the heart seemed rather greater; he had a cough, with very little laryngeal sound, and breathing and circulation were much embarrassed.

11th. The operation was performed first on the carotid. A peculiarity of a greatly enlarged superior thyroid, simulating prolongation of the sac upward, necessitated great caution until the source of the abnormal pulsation was revealed, only just room enough being found to pass a ligature round the common carotid between the aneurism and the bifurcation. The subclavian artery was then reached with remarkably little bleeding, and a ligature passed round it, pressure on the hollow of the needle obliterating the radial pulse. In disengaging the catgut a vein above the brachial plexus, either the posterior scapular or a smaller but distended vein, was ruptured; its deep position, and the filling of the cup-like wound with blood, rendered its ligation difficult and doubtful. Rather than attempt this, Mr. Barwell did not wait to verify the isolation of the artery, but knotted the catgut loosely, stuffed the wound firmly with antiseptic gauze, and let the patient be carried to bed, the radial pulse still beating. The next day Mr. Barwell removed the gauze, traced down the ligature, which included with the artery a nerve of the plexus; this loose ligature was left in place, and a fresh one was passed and tied. These operations—carotid and subclavian—were performed antiseptically. No immediate change in the tumour was perceptible. Low (milk) diet was ordered.

15th. The breathing and circulation greatly relieved; temperature normal. *23d.* Cervical tumour harder; transverse measurement by compass $3\frac{1}{4}$ inches, by tape $4\frac{3}{4}$ inches. Thoracic pulsation barely perceptible. *25th.* A very dry diet substituted. *26th.* Slight pulsation, probably collateral, in radial. *28th.* Patient suffers much from thirst. Heart-action excited; pulse 102; temperature irregular; radial pulsation disappeared. *29th.* Tumour measures by compass $3\frac{3}{4}$ inches, by tape $5\frac{1}{4}$ inches.

Sept. 3d. The hospital No. 3 diet (fairly nutritious), and one pint of beer daily. *5th.* Temperature and pulse still high and irregular. Tumour harder; measurement by compass $3\frac{1}{2}$ inches, by tape $4\frac{1}{2}$ inches. *8th.* Compass $2\frac{3}{4}$ inches, tape $3\frac{1}{2}$ inches. *9th.* Compass $2\frac{1}{4}$ inches, tape $2\frac{1}{2}$ inches. *10th.* Compass $2\frac{1}{2}$ inches, tape $2\frac{1}{4}$ inches.

On the 9th there was some arteritis of vessels in the arm; on the same day the temperature went down to 96° , and has since been normal. A like attack recurred on the 23d of September.

Oct. 21st. Since the rapid diminution in the size of the tumour commenced, the man has gone on uninterrupting well. A firm solid tumour lies behind the sterno-clavicular joint, with pulsation communicated from the aorta; it feels about the size of a cob-nut. No thoracic pulsation. Dulness extends about half an inch outside manubrium sterni. The whole aneurism is consolidated.

Remarks (abbreviated): The aneurism involved, without doubt, the aorta, innominate, subclavian, and carotid, and was not far from bursting. The operation relieved immediately the oppression of circulation and breathing, showing diminution of the thoracic, while the cervical part of the aneurism responded more slowly. Mr. Barwell considers the system of diet produced a very coagulating tendency in the blood. The whole of the subclavian is obliterated, as there is still no radial pulse. The practical proof of the theory, that aneurism of the in-

nominate may be treated by double distal ligature, has, as yet, been wanting (Mr. Heath's well-known case¹ proved to be aortic only). Six such operations have been performed. Of these, two proved fatal on the sixth day, one on the fifty-fifth, one on the sixty-fifth day; two, receiving no benefit, lived some weeks. This case furnishes the practical proof that, not only innominate aneurism, but aneurism of that vessel, and of aorta, subclavian, and carotid, are amenable to the double distal ligature. Also, we may deduce from it, what Mr. Heath's case has already proved, that aneurism of the first part of the aorta may be cured by this operation.

In reply to certain questions Mr. Barwell pointed out that before the patient came under his care he had already been subjected to rest and to medical treatment, and he could not think that anything but surgical interference would have saved the man's life. At the same time, he valued highly the treatment by diet—too much neglected by surgeons—as an adjuvant to the production of that coagulation in the sac which it was the object of the surgical operation to induce. At the time of the operation he felt what appeared to be a bulging of the carotid artery, and the height to which the tumour extended in the neck also pointed to the carotid being involved. As to the present condition of the patient, he admitted that there was a tumour which ought not to be there; but he maintained it was no larger than might be expected from the complete coagulation of the aneurismal contents, and it would require a very careful examination to make out that there was anything more now. The very great diminution in size of the tumour could only be accounted for on the view of its complete consolidation. He hoped to keep the case in view, and it was quite possible that, just as in Mr. Heath's case, where the operation resulted in perfect cure, rupture might take place from further extension of the aneurism at some later date. In Mr. Heath's case four years elapsed between the date of operation and death. The only nervous symptoms following the ligature were a dull sensation and tingling in the arm, with slight paresis, but these were transient. No sphygmographic tracings were taken. The ligatures were cut short and left in the wound, and he must say that the rapidity with which the wound healed and the rarity with which secondary hemorrhage followed were strong points in favour of the use of catgut. He tied the ligature securely with a single knot, and did not cut it too close.

Ligature of the Common Carotid Artery in Cases of Injury of the External Carotid.

In a memoir on this subject, abstracted in the *Annali Universali di Medicina (Parte Rivista)* for September, Dr. GIUSEPPE RUGGI gives the results of experiments which he made on the dead body for the purpose of determining the best operative proceedings to be followed in cases of injury of the external carotid artery, and of ascertaining the course of the blood in the upper part of the carotid after ligature and in its secondary branches. The conclusions at which the author arrived are the following. 1. There are considerable anastomoses between the carotids of one side and those of the other. 2. When the common carotid artery is tied, these anastomoses are capable of establishing a supplementary retrograde current in the course of a few minutes or seconds. 3. The current from one external carotid to the other is slow, in consequence of having to pass through a very fine network composed of the ultimate ramifications of the vessels of the two sides. 4. As regards the internal carotid, the current which takes place through the circle of Willis is three or four times as strong as that in the external carotid.

¹ Lancet, Jan. 5, 1867, p. 12, and July 2, 1870, p. 11.

Collating these results of experiment with those of clinical observation, Dr. Ruggi agrees with Velpeau that, in most cases, ligature of the external carotid is not sufficient to restrain hemorrhage from injury of one of the branches of the external or internal carotid, while the application of a ligature to one or the other of the secondary carotids absolutely interrupts all secondary circulation. He relates the following case in support of this view.

A man was admitted into hospital with neuralgia of the left inferior dental nerve, for which excision of a portion of the nerve was performed. Ten days after the operation, the patient had repeated and abundant hemorrhage from the mouth. The source of the bleeding could not be accurately determined, but was supposed to be a rupture of the inferior maxillary artery, produced by ulceration in the course of the operation-wound. The right side of the face was enormously swollen and pale, the pulse was small and intermittent, the limbs were cold, the voice was feeble. Dr. Ruggi tied the common carotid artery $2\frac{1}{2}$ centimetres (about an inch) from its origin; he also placed a ligature on the superior thyroid. The hemorrhage did not return. Along the course of the left external maxillary and superficial temporal, all pulsation was absent. The patient left the hospital perfectly cured.—*London Med. Record*, Nov. 15, 1877.

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Diagnostic Value of Pulsation, à propos of a Case of Pulsating Tumour of the Upper End of the Left Tibia.

In the *Commentario Clinico di Pisa* for May and June, 1877, Professor PASQUALE LANDI, of that city, analyzes the six cases collected by Nélaton, and considered by that surgeon entitled to the name "true aneurism of bone," four other cases collected by Volkmann, and related in Pitha and Billroth's *Hand-book*; a case of Cappelletti's (Trieste); and, lastly, one of Landi's own, making twelve in all.

The tibia was the bone affected in nine cases, in eight of which the head of the bone was the seat of the tumour, while in the ninth (Searpa's) this was below the head. The lower end of the femur in two cases, and the head of the humerus in one (Richet's), completed the list. Except two, the cases ran a slow course; in one half an injury is related, and in the other half is wanting.

All these intra-osseous tumours pulsated, except Richet's, where, however, a blowing murmur was audible. In one other only (that of Carnochan, lower end of the femur) was there a bruit.

In nine the tumour grew before the thirtieth year, and in two at the fifty-fourth and sixty-third; while in one no age is given. All resembled ordinary aneurism, in the feature of distensible pulsation (in the one case replaced by a murmur, with which it was combined in another), and in the cases of Pearson and Searpa were actually diagnosed as aneurism of the anterior tibial; but the anatomical examination failed in every case to show the artery implicated. They were all, moreover, clinically different from ordinary aneurism in the characteristic feature of a bony wall, more or less imperfect, no doubt, but present in each. In two only did complete cure result from ligature of the main arterial trunk (case of Lallemand and that of Roux). In two others, after ligature of the main artery, the tumour ceased to pulsate, but remained diminished in one case (that of Largout and Fleury) and fluid in the other (Nélaton's).

In three cases the ligature failed, and recurrence took place (Dupuytren, Carnochan, Cappelletti); but the consequent amputation was successful. Primary amputation succeeded in two (Parisot and Searpa), but fatal recurrence took place after five years in the case of Searpa. Two primary amputations were fatal (Pearson's and Richet's).

He discusses at great length the clinical signs, the results of treatment, and the pathological anatomy of this very rare class of cases, more especially in relation to their origin in a new growth, such as myeloid, or in some cases a malignant central osteo-sarcoma; and offers the opinion "that osteo-aneurism does not really exist, and that certain symptoms, characteristic of ordinary aneurism, are but accessory phenomena in the case of certain new growths of a nature more or less malignant."

His own case he diagnosed to be pulsating myeloid tumour of the head of the tibia, and microscopical examination confirmed the opinion. Amputation proved successful. The four cases of Professor Gherini are then briefly given. (1) Pulsating tumour of innominate bone, mistaken for abscess and punctured, but bleeding arrested. Ultimate death from exhaustion, the tumour spreading greatly. No examination. (2) Myeloid pulsating tumour of patella. (3) Pulsating tumour of lower end of femur. (4) Pulsating tumour of head of tibia. Thus in only one of these was the exact nature of the growth made out, but cases 3 and 4 are judged by Professor Gherini, from their resemblance to case (2), to be probably of the same nature.—*London Med. Record*, Nov. 15, 1877.

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Sarcoma of the Median Nerve; Resection without Disturbance of Sensation.

KRAUSSOLD relates in the *Archiv für Klinische Chirurgie*, Band xxi., the case of a boy aged five and a half, who, in consequence of severe and painful pressure with the hand ten months before, had a tumour of the upper arm. It had gradually developed, and was about as large as a hen's egg, lying in the right internal bicipital furrow, and reaching from the epicondyle to the upper third of the arm; there was distinct fluctuation. There were no disturbances of motion or of sensation in the forearm and hand. The swelling being supposed to be an abscess, an incision was made, when it was found that it was a sarcoma, the interior of which had become disintegrated; it was encapsuled, but, becoming spindle-shaped above and below, was found to be continuous with a thick cord which was recognized by its position as the median nerve. In extirpating the tumour, nearly eleven *centimetres* (about 4.3 inches) of the median nerve were removed. Some hours after the operation, the only disturbance of motion that could be detected was inability to bend by voluntary action the index finger and thumb; all the other motions of the fingers, hand, and forearm, as well as the sensibility of the limb, especially in the region of distribution of the median nerve, were normal. These conditions remained after the healing of the wound. The tumour was a small-celled sarcoma; a few changed nerve-fibrils were scattered within it, while others lay in its capsule. After recounting the symptoms expected to follow division of the median nerve, Kraussold comes to the conclusion that the absence of most of them in the present case may be explained in one of two ways: either by a pre-existing anomaly or by the numerous nervous anastomoses. The first supposition is rendered improbable by the fact that the divided median nerve was of normal thickness. The second assumption has more in its favour; the long duration and gradual development of the disease may have given time for a further formation of anastomoses. This case indicates the necessity for a very careful criticism of the descriptions of the remarkable results of suture of nerves, and of regeneration of nerves and restoration of their functions after division.—*Brit. Med. Journ.*, Nov. 3, 1877.

OPHTHALMOLOGY AND OTOTOLOGY.

Sclerotomy in Glaucoma.

Professor L. MAUTHNER, of Vienna (in the *Wiener Medizin. Wochenschrift* for July, 1877) has a long communication on the advantage of sclerotomy in glaucoma over iridectomy. In the year 1869, Berlin, at the Heidelberg Ophthalmological Congress, remarked that, in certain cases of chronic glaucoma, very rapid loss of vision follows the latter operation, without any hemorrhage having occurred; and he attributed these cases to the supervention of atrophy of the optic nerve as the result of the iridectomy. Liebreich answered to this, that the swelling (*Erblassen*) of the papilla after iridectomy is a constant symptom, and could not be regarded as the commencement of atrophy. Dr. Mauthner has no doubt that cases frequently occur in which vision is lost after iridectomy, where there is absolutely no visible cause to account for the unfortunate circumstance. These facts are mentioned in disparagement of Von Gräfe's operation, and as a reason why it is desirable to give sclerotomy a fair trial; but the real reasons given for the adoption of sclerotomy in glaucoma are, that the author has found many cases in which the large opening in the iris after iridectomy interferes seriously with the function of the eye, and that he finds the removal of a segment of the iris to be quite an unnecessary proceeding. He states that, in cases in which the segment of the iris has been incompletely removed, the tension has been reduced as well as in those in which no such failure has occurred; and that, when sclerotomy has been performed in the manner in which he describes the operation, the results have been more successful than those after Von Gräfe's operation.

The operation of sclerotomy described by Dr. Mauthner consists in the division of the sclerotic in front of the iris, and he gives the following directions:—

Before the operation, a drop of a one per cent. solution of the sulphate of eserine is to be applied, when the pupil will undergo contraction, unless there be atrophy of the iris. If there be atrophy, he remarks that it is exceedingly difficult to avoid prolapse. In adults the operation should be performed without anaesthetics. The division of the sclerotic should be performed upwards, in case it is necessary to perform iridectomy. On account of accidental prolapse of the iris, this is the most favourable position to do so. A Von Gräfe's cataract-knife is now to be entered a millimetre behind the edge of the cornea, and carried through as if to form a scleral flap by Wecker's method. After transfixion, the operation is completed by causing the knife to cut its way out very slowly, so that the aqueous humour may escape very gradually; it is in this manner that the prolapse of the iris is prevented; the flap is not, however, to be completed, but a small bridge is to be left at its upper part.

The author considers that the essential part of the operation of iridectomy is the division of the sclerotic at the margin of the cornea, and that the success of the operation depends on the extent of the sclerotic divided; he thinks, therefore, that the above operation is more certain than iridectomy, as the extent of the scleral wound is greater.

The knife should not be withdrawn from the eye until just as the last of the aqueous humour has escaped; as it is withdrawn, its flat side is very gently pressed upon the iris. A drop of the solution of eserine is then applied, and the eye is dressed with the usual pad and bandage.

The dressing is to be renewed after a few hours, and another drop of the solution of eserine applied. The patient should be kept in bed for forty-eight hours.

If the iris prolapse, it may either be returned by gentle manipulation with a

curette, or the operation of iridectomy may be completed. The author recommends the latter proceeding only when the prolapse is considerable, but remarks that even in this case he has seen very good results from its return.

Dr. Mantlner also hopes for good results from the performance of the operation in hydrophthalmus. He records a case in which he performed the operation with apparent success; but the time after the operation, apparently only a few weeks, was not sufficient to enable him to assert that it was successful, except in its immediate results.—*London Med. Record*, Oct. 15, 1877.

Drainage of the Eye in Cases of Detached Retina.

Deutsche Zeitschrift f. prakt. Med. of August 18th publishes an abstract of a paper read by Dr. HERMANN COHN on this subject before the *Silesische Gesellschaft für Vaterländische Cultur*. He remarked that detachment of the retina, especially in cases of high myopia, has hitherto been regarded as one of the most incurable diseases of the eye. Amongst 20,000 cases of ophthalmic disease that had fallen under his notice in the course of ten years, there had been 191, or about one per cent., of cases of separation of the retina. Siehel, Kittel, and Arlt endeavoured to effect a cure in such cases by the introduction of a needle through the sclerotic. Graefe not only punctured the sclerotic, but divided the retina, with the object of allowing a communication to be established between the fluid subjacent to the retina and the vitreous. This proceeding, though occasionally brilliantly successful, was, however, found to be not unattended with danger of cyclitis and inflammation of the vitreous, and it fell into discredit. Cohnheim, Lasinsky, and Samuelson have observed cases where a cure resulted from the employment of internal means, by pressure and by confinement in a dark chamber. Such a result, however, is exceptional. About six months ago Wecker suggested the trial of drainage of the eye by means of the introduction of a loop of gold thread through the sclerotic and under the detached retina. He applied this method in twenty-six cases, but has not published them. Cohnheim has tried it only in four cases, the myopia varying from ten to twelve dioptries, and has, in all instances, obtained excellent results. The gold wire should be very fine. In the course of these experiments Cohnheim has satisfied himself that the human eye can carry for months a gold wire of one-third of an inch in length, without the slightest reaction being excited or influence felt. Detachment of the retina may, by this means, be immediately prevented from continuing, even after it has been of three years' duration. The retina, as soon as it has become reappplied, becomes again immediately capable of perception, even after the lapse of three years, so that the field of vision recovers its normal extent. He goes on to say that only the sense of space returns, but not the perception of colour. Blue-blind and green-blind eyes at the time of detachment remain blue-blind and green-blind. After some time a separation is discernible, but it is flatter, more rugose, and no longer vesicular; and this, by slight movements of the gold drain can again be diminished. Cohnheim finally thinks the proceeding of drainage of the eye especially adapted for cases of subretinal cysticerci. In no instance was any inflammation of the eye or impairment of the pre-existing amount of vision observed. It has also the advantage that it does not interfere with general methods of treatment.—*Lancet*, Sept. 1, 1877.

On Acute Cellulitis of the Orbit.

Dr. SONNENBURG, of Strasburg, in an article (*Zeitschrift für Chirurgie*, Bd. vii., Heft. 5, 6, 1877), on acute cellulitis of the orbit, states that this is not an affection of frequent occurrence, although it might be assumed that the orbitar

cavity, from the abundance of fat and cellular tissue contained therein, and from its richness in vessels and nerves, would present very favourable conditions for the origin and development of phlegmonous inflammation. The cases that have been recorded in surgical literature show that acute orbital cellulitis may be due to one or other of very many causes. In some instances the affection occurred in the course of an infectious disease, as typhus, variola, scarlatina: it has not unfrequently been observed as a complication of suppurative meningitis, and has occasionally coexisted with or followed facial erysipelas. Traumatism, surgical as well as accidental, has, in many cases, given rise to this form of inflammation. Instances have been recorded of orbital cellulitis consequent on operations for squint and on enucleation of the eyeball. The prolonged presence of a foreign body in the orbit, periostitis or necrosis of some portion of the walls of the cavity, and inflammation of the lachrymal gland, have been recorded as occasional antecedents of the orbital cellulitis. In two cases of rapid and destructive phlegmon of the orbit recorded by the author of this contribution no cause for the affection could be discovered. Acute orbital cellulitis may occur at any period of life, but has been most frequently met with in young and middle-aged subjects. The most favourable seasons seem to be the spring and the autumn. This affection of the contents of the orbit has, according to the author, well-marked clinical characters, and may in most instances be readily diagnosed. From the facts that the inflamed tissues are inclosed on all sides but one within unyielding osseous walls, and that they are mixed up with many bloodvessels and nerves, the symptoms of acute orbital cellulitis are, as may be imagined, very severe, and the pain intolerable. The inflammation is usually preceded by rigors, general uneasiness, and fever. The more prominent symptoms during the attack are, intense pain in the orbit, exophthalmus, swelling and congestion of the eyelids, oedema of the conjunctiva, especially of tarsal folds, which extend to and overlap the margins of the cornea. The movements of the eyeball are usually abolished in consequence of participation of the recti muscles in the inflammatory action. If proper care be taken in establishing the diagnosis, acute cellulitis of the orbit ought to be distinguished without difficulty from any other affection of this region. In general inflammation of the eye exophthalmus is due to distension and enlargement of the globe itself, whilst in cases of genuine inflammation of the adipose tissue of the orbit there is simple dislocation of the eyeball forwards. From acute inflammation of the lachrymal gland, cellulitis of the orbit may be distinguished by the acuity of its process, by the severe pain attending it, and by the position of the eyeball, which is dislocated directly forwards, and is not, as in cases of the former affection, forced downwards and inwards. In periostitis of a portion of the orbital wall the margin of the orbit is generally tender on pressure, the skin and subcutaneous connective tissue of the eyelids and cheek are not so readily and so speedily involved, consecutive inflammation of the orbital fat is generally localized, and the eyeball is dislocated laterally rather than in a forward direction.

In the opinion of Dr. Sonnenburg the phenomena and symptoms attending genuine phlegmon of the orbit indicate that this affection is an infective inflammation. He holds that in those cases where no other cause is to be made out, the orbital inflammation is connected with inflammatory processes in the deeper parts of the face, as the pharyngeal and nasal cavities. This infective phlegmon is attended with such severe local phenomena, in consequence of the special conditions—pain, pressure symptoms, swelling, and fever—being intensified to the highest degree by the unyielding nature of the walls of the orbit and by the abundance of vessels and nerves coursing its cavity. The occurrence of consecutive meningitis is not so frequent as one might be led to anticipate by a knowledge of the free communication of the lymph spaces of the orbit with those of the cranial

cavity. Facial erysipelas is a much more frequent complication. In orbital phlegmon the eye is generally in much danger. In the two cases reported by Dr. Sonnenburg the functions of this organ were speedily destroyed. There was considerable retinal extravasation of blood in one case, and ulceration with opacity of the cornea in the other. In many cases vision is destroyed through neuritis optici; sometimes, though less frequently, through detachment of the retina, or through suppurative irido-choroiditis. Orbital phlegmon terminates most frequently in suppuration, and often in necrosis of the soft tissues of the cavity. The most important details of treatment are deep incisions and the application of moist warmth.—*British and Foreign Med.-Chir. Review*, July, 1877.

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On the Treatment of Suppurative Otitis by Drainage of the External Auditory Meatus.

In the *Annales des Maladies de l'Oreille et du Larynx*, for December 31, 1876, is an article by Dr. GUYON, of the Neckar Hospital, on the above subject. He says that drainage of the external auditory meatus has enabled him to obtain, in two different cases, very good effects. The surgical means to which attention is drawn is one of the most simple, its application is easy, and its aim well defined. Its object is to insure by the aid of a drain a free and continual discharge of the pus secreted in or poured into the external meatus. This free and easy discharge rapidly relieves pain. The paroxysms lose their intensity and soon disappear, and the progress of the disease is very favourably influenced. The normal disposition of the external meatus lends itself badly to this free and continued discharge, necessary for the regular cure of any suppurating cavity. It is scarcely necessary to recall to mind the curved direction of its walls, and its narrowing at the point of junction of the osseous and cartilaginous portions, its size being in fact greater at the extremities than in the middle. It is thus easy to see that pus must accumulate in the deeper part of the auditory canal, and that it may, by accumulating, cause pain, and maintain by its imperfect evacuation the lesions which have caused its secretion. The auditory canal follows in this respect the pathological law which governs all suppurating cavities.

The first occasion on which the author applied drainage to the auditory meatus was in October last. He was called in by a *confrère* to a member of his own family, with the idea that he might be able to do something to alleviate the painful paroxysms which had existed for some days, by incising an abscess of the meatus, to the existence of which the pain was attributed.

The inferior wall of the meatus was found swollen and red; but though there was undoubtedly a phlegmonous condition, there was no evidence at any point accessible to a bistoury of any collection of pus. It was stated, however, that pus had previously flowed abundantly, and had recurred several times, and that this appeared to determine the paroxysms.

The author considered that the painful symptoms were due to the retention of pus, but he had never used drainage in a similar case, nor did he know any instance of such a practice. It was inoffensive, however, and was too much in accordance with the tastes of the patient, who strongly objected to the bistoury, not to be proposed. "I took then a piece of drainage-tube, of medium size, and plunged it into the auditory meatus, taking care not to press it against the membrana tympana, and to let it hang out a sufficient distance into the concha.

"There was no immediate discharge of pus, this being one of the periods of remission. The effect of this mode of treatment was, nevertheless, very happy. From the time of the application of the drain there was no paroxysm, and fifteen days afterwards the patient came to tell me of the excellent result obtained. The drain was cleaned and replaced daily, and the patient, recognizing its value, had not yet ventured to do without it completely.

This first case was one of external otitis; the second, which occurred in the practice at the Neekar Hospital, was one of otitis of the middle ear. The patient, a month before admission, had had a simple quiasy, followed by pains in the ear. On admission, he presented all the signs of suppurative otitis media, with perforation of the membrane and invasion of the mastoid cells. The mastoid region was the seat of a very characteristic oedematous swelling, and the tympanic projection was evident. The pain was more severe at night than by day, rest in bed impossible, and mastication painful.

"I immediately applied a drain of middle size, about three centimetres long. The results of this mode of treatment, combined with poultices, were more complete than I ventured to hope. The pain rapidly lessened, and was only very slight on the next day but one after the application. At the same time, the oedematous swelling of the mastoid region diminished and had disappeared by the fifth day; and although the patient is still under treatment, and always continues his drainage-tube, his local state is sufficiently satisfactory to be considered as certain of cure."—*London Med. Record*, June 15, 1877.

MIDWIFERY AND GYNÆCOLOGY.

On the Investigation of the interior of the Uterus by the Carbolized Hand at long Intervals after Delivery.

Dr. J. MATTHEWS DUNCAN, Obstetric Physician to St. Bartholomew's Hospital, reports (*Brit. Med. Journ.*, Oct. 27, 1877) the following case.

Mrs. A. B. was confined at her home in the south of Scotland on June 5th, 1876. The child born was her second. She was attended by her physician, who lived in her neighbourhood, and to him I owe most of the details now to be given of her case. The labour was easy, natural, and lasted four hours. The placenta was removed without difficulty about fifteen minutes after the birth of the child. The membranes were twisted to insure their complete withdrawal, and then a dose of ergot was administered. At 9 A. M. all was completed and well. In the evening of the 6th, Mrs. A. B. had a feeling of cold in the back and severe lumbar pain. On the morning of the 7th, her pulse was 120, and at night it was 140, at which rate it continued till after my visit on the 8th. The temperature rose correspondingly. I saw the patient on the afternoon of the 8th, eighty hours, or nearly three days and a half, after her confinement. I found her with every appearance of having an attack of pyæmia or puerperal fever *post-partum*. The abdomen was slightly tympanitic, the uterus somewhat tender.

The circumstances of the case, both intrinsic and extrinsic, rendered the crisis extremely alarming and important. The lochial discharge was natural, and reported as having no fætor. Nevertheless, I made a vaginal examination, pushing the finger into the cervix uteri, and hooking away shreds of clot, which were unexpectedly found to be distinctly putrid. A second attempt brought away a small bit of membrane, putrid. Being at a great distance from proper instruments to complete what I regarded as the desirable treatment—namely, the removal by forceps of any other pieces of membrane or decidua—and time being very valuable, I had chloroform administered, with a view to the introduction of my hand into the vagina and of my fingers into the uterus, to effect the exploration and removal of what might be found that should be taken away. Doing this I gradually penetrated further and further into the uterus without finding anything. At last my whole hand was inside the organ, which felt not unlike an

uterus only recently evacuated. In the fundus of the uterus, it was now my extreme good fortune to find adherent an irregular lacerated patch of chorionic membrane, about four inches long and an inch broad. It was found to be fetid. After this, I left the patient. Both pulse and temperature fell in a marked manner after this operation. The alarming appearance and symptoms disappeared. The pulse remained high for several days; but the extreme anxiety of the physician and friends was subdued for good. The fetor of the discharge was recognized by the nurse after my visit, but only at first, or for less than a day.

While, as is well known, there is often insuperable difficulty in classifying cases of so-called puerperal fever under the heads pyæmia, septicæmia, ichoræmia, there can in this instance be no hesitation in designating the disease as simple septicæmia. Such cases are familiar to the gynecologist. A decomposing uterine fibroid, a decomposing blood-clot in a hæmatocœle, produce shiverings, sweatings, vomiting, delirium, high pulse, high temperature; a most alarming combination of symptoms, which, on the removal of their cause, is dissipated with extraordinary rapidity, in a few hours, as if by a charm. Such was the fortunate course of events in the case just narrated; but, had the putrefying membrane continued much longer in a puerperal uterus, a fatal result was probable.

In the case which I have narrated, the greatest care and attention did not secure the complete withdrawal of the membranes. The position of the persistently remaining shred renders it unlikely that any forceps would have reached it and removed it entirely; nor is it probable that it would have come away in the discharges early enough to allow of the preservation of life, already most seriously threatened. It is under these circumstances that I propose the new operation of investigating the interior of the uterus by the carefully carbolized hand of the accoucheur, with a view to finding and removing decomposing substance. In such a state of matters, I have hitherto used the practice of Baudelocque;¹ namely, antiseptic intra-uterine injections. I employ a double catheter, and I have repeatedly had reason to be satisfied with the results. But, in the cases where I have used this treatment successfully, there has not been washed out by the injections any shred of hidden membrane; and I very much doubt whether injections in the case which I have narrated, would have produced this supreme result; for, besides the difficulty of directing the current so as to envelop and remove the adherent membrane, there is the absence of any knowledge where the hidden membrane is—absence, perhaps, even of suspicion of its presence.

There is, of course, as yet, no properly formed professional opinion as to the length of time after delivery during which it is possible to introduce the whole hand into the uterus in a natural case; and it is the whole hand that has to be introduced with a view to doing completely the operation I propose. The nearest approach to conditions similar to those of my case is found in instances of retention of the placenta. Active interference in this morbid condition implies introduction of fingers, and often of the whole hand; and the difficulty feared is contraction of the internal os uteri or higher up.

The Septic Influence of Lochial Discharge.

In a treatise published at Giessen, Prof. KERNER describes a series of experiments undertaken in order to ascertain the poisonous influence of normal and abnormal lochial fluids at different periods after parturition. The lochial fluid was taken daily for from five to seven days after delivery, and its effect was tried in two different ways; first, by injection under the skin of rabbits, and secondly by inoculation of the parturient women themselves. The author arrived at the

¹ System of Midwifery, Heath's translation, vol. ii. p. 25.

following results: In all cases, even when the course of the puerperal state was perfectly normal, the lochial fluid injected into rabbits produced extensive inflammation and suppuration in the cellular tissue at and around the point of injection. In many cases the lochial fluid, even of the first day, produced diffuse phlegmonous inflammation, in others this was only produced by the lochia of the second or third day. The intensity of the effect increased in proportion to the time which had elapsed since delivery, within the limit of the period of observation; but it was not ascertained precisely when the maximum was reached, or when the poisonous quality had disappeared. The author concluded, however, that this would be the case when the discharge had become purely mucous. The later lochia of healthy puerperal women produced abscesses similar to those caused by putrid lochia in the earliest days. The constitutional disturbance associated with the abscesses increased in a similar ratio, in proportion to the date of the lochia. The diurnal temperature of the animals experimented upon showed a certain resemblance to that of the puerperal women in whom the lochia were putrid. The blood which flowed from the genitals immediately after delivery proved to be comparatively harmless when injected subcutaneously. One exception, however, to this rule occurred, a case in which a slough was formed at the point of injection, and the cellular tissue beneath became infiltrated with pus. The author considered, however, that this might have arisen from some want of care in filtering the blood or making the injection.

The result of experiments by inoculation upon the puerperal women themselves was that the lochial fluid of the first and second day produced scarcely any reaction, only in some cases a slight appearance of inflammation. That of the third and later days, however, produced decided inflammation, but only of a slight and limited character, if taken from a healthy puerperal woman. The results of inoculation thus differed somewhat from those of subcutaneous injections in rabbits, in which normal lochia of the later days produced as acute an inflammation as putrid lochia. In cases where any puerperal disorder occurred, the inoculation produced a higher degree of inflammation, and this occurred, not only with putrid lochial fluid, but with that which, to the senses, did not appear other than normal, a fact which has great importance in reference to the etiology and prophylaxis of puerperal septicaemia. The first marked rise of temperature did not coincide in time with the appearance of this poisonous quality in the discharge, but in some cases occurred earlier, and in some later.—*Obstetrical Journal of Great Britain*, Nov. 1877, from *Archiv für Gynäkologie*, B. xi. H. 2.

— Mammary Abscess treated Antiseptically.

DR. JAMES CARMICHAEL reports (*Edinburgh Med. Journal*, Oct. 1877) the following case where the antiseptic method of treatment contrasted most favourably with the old:—

Mrs. B., multipara, of somewhat delicate constitution, fell in labour on the 15th of November. I saw her about six hours after. On examination, the breech presented at the outlet. During the interval between the pains, the feet were brought down, and delivery was easily effected. All went on well till the third day, when the breasts became gorged, and she had an attack of ephemeral fever, which passed off in a few hours in the usual way. The child took the breast lazily, and both nipples became sore. Glycerine of tannin was applied, and the child allowed to take the breast only through a shielded teat. The patient continued to recover slowly, and was able to be up on the eleventh day. The nipples, however, were still troublesome, but otherwise she appeared well. On the fifteenth day the right breast was painful, and a hardness could be felt in the submammary tissue fixing the breast to the pectoralis muscle. The swelling

continued to increase, and the inflammation rapidly spread throughout the mamma. On the seventeenth day fluctuation became quite distinct, and I accordingly made an incision two inches in length, at the most depending part of the abscess, in a line radiating from the nipple to the circumference of the breast. About twelve ounces of thick creamy pus were evacuated, poultices applied for twenty-four hours, and subsequently water-dressing. A considerable quantity of matter continued to be discharged for some time, and three weeks elapsed before the wound healed.

Four days after the abscess in this the right breast was opened, the patient began to complain of the left breast, and on examination it was found to be tumid and swollen, but painless. Belladonna ointment was applied with gentle friction. Diluted tincture of iodine was likewise used, but without effect. At the end of ten days the breast had become enlarged and prominent, and fluctuation was distinct over its entire extent, giving the impression that the whole mamma was converted into one large abscess.

The patient was now very weak, and the excessive discharge from the other breast, no doubt, assisting in the production of this condition, it became a matter of some moment to save her, if possible, a repetition of the same debilitating process a second time. I therefore determined to operate on this occasion antiseptically.

Having placed a rag soaked with carbolic oil over the breast, I raised its edge and made an incision about an inch long, quickly replacing the rag. With both hands applied, I gently squeezed out the entire contents of the abscess, amounting to about a breakfast-cupful of matter. A drainage-tube was now inserted into the cavity, and through this a weak carbolic solution injected, so as to wash out completely the interior of the breast. The wound was now dressed by applying first a piece of lint soaked in carbolic oil, then several layers of dry lint of a larger size on the top, and over all a thick layer of chloralum wool. The following day the dressings were removed. They were thoroughly soaked with serous oozing, but no more pus had been discharged. The drainage-tube was removed and the wound dressed as before. On the fifth day the dressings were again removed and the wound was healed.

The wound in the opposite breast was still open and discharging, and was not closed for fully a week after this breast had been firmly healed.

The comparative result of treatment in the two abscesses, I think, speaks for itself. I am well aware of the folly of attaching much importance to a single case as evidence in any argument; but, as in other parts of the body, the antiseptic treatment of abscesses has proved so successful, I think it is not unreasonable to expect similar good results in mammary abscess. At all events, as I think, the method deserves a trial.

On the Bearings of Chronic Disease of the Heart upon Pregnancy and Parturition.

Dr. ANGUS MACDONALD, Lecturer in Midwifery in the Edinburgh Medical School, terminates an elaborate paper on this subject (*Obstetrical Journal of Great Britain*, Nov. 1877) with the following practical deductions:—

1. Chronic heart disease ought to be looked upon as a grave contraindication of marriage, more especially if it assumes the form of anything approaching to severe stenosis of the mitral, or to serious aortic incompetency; in such cases we ought, if consulted, to dissuade from marriage.

2. There is much less danger in the case of mitral insufficiency, pure and simple. But still the risk is even then considerable.

3. In all cases, when consulted, we ought not to give our sanction to marriage

if in chronic heart disease there are any serious symptoms of cardiac disturbance present, such as attacks of dyspnea, breathlessness, palpitation on exertion, hæmoptysis, etc., and this injunction ought to be the more imperative the younger the patient and the more recent the acute disorder which has given rise to the chronic lesion.

4. Such patients as are married and have chronic heart disease, ought not to be allowed to suckle their children, as that appears to tend to keep up the cardiac hypertrophy, and increase the risks likely to arise from the defective heart.

5. All possible causes of cold and all severe exertion should be avoided during the pregnancy, if possible, and more particularly during the latter months of it.

6. Premature labour should seldom or never be recommended, because it is so much more likely to do more harm by disturbing the action of the heart and the condition of the lungs, than any good it might produce by terminating the evil effects of the pregnancy. It is to be remembered that relief of symptoms is not certain after delivery, or anything like certain.

7. The only conditions which seem to warrant the induction of premature labour are the presence of influences which unduly distend the abdomen, and thus keep the diaphragm in a state of continuous elevation.

8. The same careful principles of management ought to guide us in the case of a patient with chronic heart disease during pregnancy and the lying-in period, as in any other state of the system, similarly complicated with heart disease.

9. In almost all the cases I have met with chloroform has been given, and apparently with benefit during delivery. If carefully administered I think it cannot but be useful in all cases. My reasons for this view are given above.

10. All legitimate means ought to be used to lessen the effects of the down-bearing efforts, and therefore the judicious and timely application of forceps or of turning is extremely important. In cases of a large amount of liquor amnii, timely rupture of the membranes is calculated to be of great service, as it allows the diaphragm to descend, and thus lessens the embarrassment in the lesser circulation.

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On Abnormal Softness of the Nulliparous Uterus, as a Factor in the Etiology of Uterine Distortions, and as a Cause of Impairment of Power of Locomotion.

At the late meeting of the British Medical Association Dr. GRAILY HEWITT read a paper on this subject, in which he stated that eight years ago he directed attention to the connection between marked distortion of the uterus and impaired locomotive power, under the designation of "uterine lameness." Further observations on this subject had led him to the conclusion that a very unusual softness of the uterine tissues is a nearly constant accompaniment of this tendency to alteration of shape of the nulliparous uterus; and the present paper was intended to illustrate, by clinical data, the connection between the undue softness of the uterus and its consequent pliability, and impairment of power of locomotion thereon consequent. A series of twelve cases, taken from the author's private case-book, from June, 1873, to November, 1874, were related, in which the impairment of locomotive power, associated with uterine disorder, came under notice in a more or less typical form. This typical form might be thus described: A young, generally unmarried, woman; an invalid for some months or some years; more or less feeble; unable to walk more than a short distance, sometimes only across the room, without producing aching or severe discomfort; power of recovering legs generally present, the impairment not amounting to paralysis, unless in very extreme cases. Further general characteristics were: A general inability to take food in proper quantity; frequent nausea, the latter intensified by the vertical position; emaciation, and an approach to actual starvation were observed in long-

standing cases; menstrual disorders were frequently present, though variable in nature. The malady was troublesome and tedious in the highest degree; after months or years of inefficiency, the patient became a confirmed invalid. In the twelve cases detailed, these symptoms were observed; and on examination there were found to be present various degrees of alteration in the shape of the uterus, together with, in most of the cases, a very abnormal pliability of this organ. Clinical observation of these cases proved that the difficulty in locomotion arose from the circumstance that, in the erect posture, the alteration in the shape of the uterus became intensified. The author called particular attention to the marked softening of the tissues of the uterus, as a feature most worthy of notice. He considered it due to an impairment of the nutrition process in the uterus itself. The general impairment of nutrition was extreme in the cases described; the uterus participated; the general strength having been restored by adequate remedies, the local (uterine) weakness always became lessened in a commensurate degree. A great cause of this malnutrition of the uterus in young women was insufficient attention to the dietary during the growing age. The uterus being unduly pliable, it was readily flexed and distorted by physical exertions of various kinds. These distortions gave rise to discomforts and pains of diverse kinds. Locomotion had the effect of increasing the pains; and hence, after a time, locomotion ceased to be possible. The treatment practised and advocated by the author consisted, in the first place, of assiduously nourishing the patient; and, in the second place, of maintaining the uterus in its proper position and shape so long as the undue softness persisted. The latter object was secured in some cases by the maintenance of the horizontal position alone; in other cases, where the malady is of long standing, by the assistance of vaginal pessaries, adapted to restrain the descent of the fundus uteri backwards or forwards as the case might be. The following propositions embodied the author's views. 1. The discomfort in walking, or produced by the vertical position, is due to an alteration in the shape of the uterus. 2. The alteration in the shape of the uterus may be quite temporary, though, by a process of repetition, it tends to become permanent. 3. A softened condition of the uterine tissues renders the organ very liable to such alterations of shape as will give rise to uncomfortable sensations, or even to acute pain. 4. This softened state of the uterus is usually associated with general debility of the whole system. 5. The softening is essentially an indication of malnutrition of the uterus. Dr. Copeman (Norwich) had seen two cases of a similar character, in which the difficulty of locomotion was mental; in each case, there was a slight displacement of the uterus; he put this right with the finger, and soon had the patient well again. He considered the symptoms of a nervous character, and should not think of using pessaries.—*British Med. Journ.*, August 25, 1877.

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Ovariectomy during the Course of Acute Peritonitis.

Mr. LAWSON TAIT, Surgeon to the Birmingham and Midland Hospital for Women reports (*Medical Examiner*, Nov. 29, 1877) four cases of ovariectomy performed during the course of acute peritonitis, three of which recovered, and one died. Mr. Tait says, I do not know how to account for the peritonitis in any one of the four cases narrated, but the complete success of its treatment by removing the tumour and cleansing the cavity, in three out of the four, induces me to believe that we may yet venture in the same direction in cases where the peritonitis is not associated with an ovarian tumour, but with some other cause which may be local, or might even be of a more general nature. In such a case, for instance, as after an operation on the uterus the occurrence of traumatic suppurative peritonitis might be treated on the principle of opening and emptying an

abscess. With proper precautions, I do not think that the mere opening of the abdominal cavity is at all a hazardous operation. I have made a large number of exploratory incisions, and I have never yet lost a case. In such a condition as I have supposed, the relieving the peritoneal cavity of the material which is undoubtedly the source of general systemic poisoning would be an undoubted benefit. Further I am inclined to believe, that the operative treatment of all kinds of serious peritonitis is one of the possibilities of the surgery of the future.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Acute Poisoning by Acetate of Copper.

Messrs. FELTZ and RITTER arrive at the following conclusions (*Journal de Pharmacie et de Chimie*, May). 1. The acetate of copper is more active than the sulphate. 2. The symptoms are much more intense when the animals are empty. 3. The food and drink take a well-marked taste from the presence in them of acetate of copper. 4. The appearance of jaundice indicates that in subacute poisoning by the salts of copper there is produced a supersecretion of bile, analogous to that occurring in poisoning by arsenic, antimony, and phosphorus.

The poisonous dose appears to oscillate between 0.45 and 0.5 gramme per kilogramme of body-weight. Death occurs in 6 to 12 hours after mucous, bilious, and bloody vomiting, a serous and sanguinolent diarrhoea, and rectal tenesmus, followed by paralysis of the sphincter ani. Death is immediately preceded by tetanic convulsions. The loss of weight varies from 750 to 1200 grammes, and the temperature falls to 95° Fahr.

Analysis gives the quantity of copper found in the liver as from 31 to 34 milligrammes in livers weighing 290 to 350 grammes. The urine of dogs poisoned by the acetate or sulphate of copper always showed notable proportions of the copper salts; 1600 cubic centimetres contained about 13½ milligrammes.—*London Med. Record*, Nov. 15, 1877.

Toxic Properties of Dynamite.

In a Paris thesis, M. BRUET sums up with the following conclusions as to the toxic properties of dynamite in nitro-glycerine (*Annali Universali di Medicina*, August). 1. Nitro-glycerine is a poison, the energy of which is in direct proportion to the rapidity of its absorption. 2. It is most violent when quickly absorbed: a few drops are sufficient to strike down an animal in five minutes, and death follows in clonic and tonic convulsions. 3. It is less dangerous when absorbed slowly, and in this case kills by asphyxia, the fatal dose being rather high. 4. A man exposed chiefly to the absorption of nitro-glycerine has rather to fear the chronic or slight results than acute poisoning or death. But he should avoid all conditions which may expose him to rapid absorption of the poison, as in this case there would be danger of sudden death. 5. For these reasons it is not superfluous to take precautions against exposure to an atmosphere in which particles of dynamite are given off.—*London Med. Record*, Nov. 15, 1877.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

A Case of Fracture of the Body of the Scapula. By E. T. EASLEY, A.M., M.D., of Little Rock, Arkansas.

Mr. C., a well-developed and athletic white man, 38 years old, applied to me last September, on account of injuries sustained five days previously. He had fallen on the track of a street railroad, and the carriage had passed partially over his prostrate body. The right forearm and thigh were much bruised and swollen, the skin of the former cut in two places. The dorsal region of the chest was extensively ecchymosed, and especially so in the neighbourhood of the shoulder-blade. The scapula itself presented an irregular, blackened eminence, in which the normal outlines of the bone were almost entirely lost. By steadying the superior angle of the blade and pressing downward in a direction corresponding to the natural situation of the inferior angle, a false point of motion could be distinctly made out. The diagnosis was a fracture of slight obliquity of the body of the bone below the spine.

It appeared that the rim or shoulder of the wheel had passed upward between the internal border of the bone and the spine, separating the vertebral attachments of the rhomboidei muscles, while the weight of the opposite side of the wheel falling on the body of the scapula produced the fracture. The character of the accident and the unopposed action of the teres major and minor muscles caused the detached fragment to turn upward so much as almost to overlie the spine. It has been laid down that usually there is not much displacement in fractures of the body of the scapula.¹ Hamilton, however (*Fractures and Dislocations*, 5th ed. p. 211), declares that more or less displacement is the rule. Unquestionably in the present case the deformity was very striking.

It was found almost impracticable to adjust the broken surfaces even tolerably well, quite impossible to retain them in apposition, and considering that the fracture was five days old it was not thought best to make persistent efforts to attain that end. The immobility of the shoulder-joint was secured by a moulded splint of binder's board and bandage, the forearm was flexed and supported in a sling across the chest. A broad roller bandage was then carried firmly around the chest so as to cross the broken scapula in several directions. The patient was informed that the usefulness of his limb would only be slightly impaired, and that considerable deformity would remain as a consequence of his misfortune. The prognosis was fully established. The swelling and tenderness rapidly subsided,

¹ Bryant, R. Smith, Liston. Gross.

the patient complained of but little pain at any time, the strength and motion of the arm appear to be as perfect as ever, and the deformity of the shoulder-blade is very perceptible, even when he is dressed in his ordinary clothing.

Shot fractures of the scapula in army experience are not by any means uncommon. The Crimean surgeons saw a large number of such wounds, as did those of the Franco-Prussian war, whilst our own civil war as stated by Dr. Otis furnished 1423 determined cases of the injury.

The accident for several reasons is very rare in civil life. Unlike the long bones, the blade is not placed between resisting points, and so is in a great measure exempt from the effects of indirect violence. Its rounded and inclined contour and protected situation render it but little liable to be broken by direct injury. The shoulder-blade, it is safe to assert, is never fractured except by great direct violence. Only two instances are on record in which the bone is said to have been broken by muscular action. One of these, mentioned by Malgaigne, Hamilton evidently regards as apocryphal, and in the other, that of Mr. May, of England, the bone, as suggested by Gross, must have been exceedingly brittle from some organic defect.

Surgeons have differed widely in relation to the minor details of the treatment of this injury, and especially as to whether the shoulder should be elevated, depressed, or allowed to assume its normal position. Again, it has been advised that the elbow be carried forward; that it be carried backward; that it be taken away from the chest, and that it be firmly bound to the chest. The essential apparatus is very simple, and need only consist of a sling for the forearm, and a circular roller bandage for the thorax. My friend, Dr. Breysaehel, of this city, has suggested that the elastic shoulder-braces might be used to advantage in such injuries, and I think the idea a good one.

DOMESTIC SUMMARY.

Menstruation and Oculation.

Dr. T. GAILLARD THOMAS, at a meeting of the New York Obstetrical Society (*American Journal of Obstetrics*, Oct. 1877), said that he had repeatedly diagnosed double ovarian tumour from the absence of menstruation, and the operation had shown the correctness of his opinion. He felt that the future would show that menstruation does depend on the function of the ovary.

Dr. NOEGGERATH said that one case of menstruation persisting after the ovaries had been removed would prove the lack of dependence of menstruation on the ovaries, and many such cases had been collected.

Dr. Thomas mentioned that he had removed both ovaries in ten cases. Two died; of the remaining eight, only one had menstruated since the operation.

Brief Study of the Hundred Cases of Menstruation.

In the number of the *American Practitioner* for August, 1877, Dr. THOMAS PARVIN presents a study of one hundred cases of menstruation observed at the Indiana Reformatory for Women and Girls. With two exceptions none of these subjects is more than nineteen years of age, and, four excepted, all are white; none married; and though some have lapsed from virtue, there has been no case of pregnancy continuing until term, and probably not half a dozen of abortion. All are natives of the United States, most of them born in the country; the majority are daughters of the people, and many of them with little education, many exposed to cold, ill fed and poorly clothed, and thus subjected to influences which ordinarily retard the ascension of puberty. On the other hand, some at least of these girls last referred to have had the force of the retarding influences lessened, if not destroyed, by licentious associations and acts: the average result, then, of this study might be at least an approximation to the truth.

The earliest menstruation was at nine years, the latest at eighteen. The average age in these one hundred cases, for the first menstruation, is thirteen years and eight months.

The average duration of the flow in the hundred cases was four days and six hours: the longest period being seven to eight days, the shortest twelve to twenty-four hours.

In more than one-fourth of the cases the duration of the flow was three days, a larger percentage conforming to this period than to any other.

In sixty-four out of the hundred, menstruation takes place without suffering, while in the thirty-two others in which pain is observed it is an inconstant phenomenon in fourteen, leaving only eighteen in which it is constant. The painless performance of menstruation, in so large a proportion of cases, may be attributed in part to the regular lives these girls live, and the absence of great excitement. The fact just stated leads me also to believe that it is probable that these hundred cases, though too small an induction for absolute conclusion, may fairly represent both the average age of first menstruation and the duration of the flow, as occurring in this country.

Localization of Diseased Action in the Oesophagus.

From a careful anatomical and clinical study of this subject, Dr. HARRISON ALLEN, Prof. of Comparative Anatomy in the University of Pennsylvania, arrives (*Phila. Medical Times*, Oct. 13, 1877) at the following conclusions:—

1. Foreign bodies are liable to be retained at the beginning of the oesophagus behind the cricoid cartilage.

2. Passing this point, they do not, as a rule, reach the cardiac end, or "lower part," but are apt to be lodged *just above* the left bronchus as it crosses the oesophagus.

3. The cricoid region is exceedingly liable to invasion, and if the disease extends thence downward it is often limited by the left bronchus.

4. It is probable that diseased action may occasionally originate at the point of greatest narrowing of the thoracic portion, viz., just below the superior thoracic aperture.

5. The region of the left bronchus is very frequently attacked, the disease commencing either *behind* or *just below it*, and extending thence downward.

6. The cardiac end of the oesophagus is less frequently attacked than either the cricoid or bronchial portions.

7. Resistance at or near the left bronchus can be detected by a probang meeting resistance at eleven inches from the teeth.

8. The dangers attending the forcible use of the probang below the region of the cricoid become more manifest when the anatomical relations of the left bronchus are borne in mind.

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Relation of the Urinary Organs to Puerperal Diseases.

Dr. W. M. CHAMBERLAIN, Physician to Charity Hospital, New York, contributes to the *American Journal of Obstetrics* (April, 1877) an interesting paper on this subject. His conclusions are as follows:—

1. Acute erysipelatous inflammation of the external genitals may ascend to the kidney, sometimes by the inner and sometimes by the outer surface of the urinary tract.

2. The blood of the parturient woman, saturated with fibrine and poor in hæmoglobin, predisposes her to disease of the excretory organs—the kidneys and liver. With a sufficient exciting cause acute fatty metamorphosis takes place. Fatal cases only are demonstrable, but minor grades of the process are probably not unfrequent.

3. Lymphangitis limited (cellulitis) and lymphangitis diffuse may mechanically induce acute œdema of the kidney in the puerperal woman by obstruction of the ureter.

Diphtheritic or other inflammation involving the muscular coat of the bladder produces the same result.

However excited, œdema of the kidney tends to rapid degeneration both of the tubular and inter-tubular structure.

4. Diffuse lymphangitis, commonly attending septic processes, by rapid destruction of the hæmoglobin, tends to the same result, while ulcerative endometritis, suppurative metrophlebitis and cellulitis, tending to pyæmia, not unfrequently are productive of metastatic suppurative nephritis.

5. The condition known as uræmia tends to develop peritonitis in parturient women.

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The Post-mortem Imbibition of Poisons.

In a paper read before the College of Physicians of Philadelphia, and published in their *Transactions* (third series, vol. iii.), Dr. REESE has discussed the very important medico-legal question, Whether a poisonous solution introduced into a dead body, either by the stomach, the rectum, or hypodermically, can percolate through the tissues, by osmosis, so as to impregnate the contiguous organs, and thus produce appearances that might give rise to the suspicion that the poison had been swallowed during life? It will be remembered that the detection of a poison after death *in the organs* of the body is generally regarded by the toxicologist as the most conclusive proof that the death was occasioned by poison—indeed, far more conclusive than the mere discovery of the poison in the stomach—since, in the latter case, the noxious substance might possibly have been introduced into that organ after death; or, even if swallowed during life, it might not have had time to have been *absorbed* into the circulation before death took place from some other cause. The important and interesting question for the legal physician, then, is, Whether it is possible for a poison to get access into a human body, *after death*, and produce appearances in that body similar to, if not identical with, those resulting from swallowing the same poison during life? Dr. Reese very properly remarks that, if the affirmative of this proposition can be established, a very strong point in legal medicine will be made; and a very powerful weapon might thus be placed in the hands of the defence, in a criminal

trial for poisoning, which may be wielded by a skilful counsel either for good or evil.

By the *intentional* method of post-mortem imbibition of poisons, the author designates those cases in which poisons have been introduced designedly into the dead body for sinister purposes, and with a view to raise the suspicion of murder against an innocent person. Although in all the annals of poisoning no mention is made of any actual instance of this most diabolical crime, yet we find such high authorities as Orfila and Christisen admitting that it may be quite possible. Dr. Reese cites a remarkable case that occurred in one of our Western States some years ago, in which there were certainly very strong suspicions that a dead body had been thus tampered with for evil purposes. In order to bring the whole matter to the test of actual experiment, at Dr. Reese's suggestion, a member of his class at the University, Dr. George McCracken, performed a series of experiments on the dead bodies of dogs, injecting into their stomachs solutions of arsenic, tartar emetic, and corrosive sublimate, respectively; then burying the animals, and disinterring the bodies after the lapse of different periods of time. The results given are very striking and conclusive: "After twenty-one days' burial, in the case of all three poisonous solutions, on opening the abdomen of the animal, the characteristic coloured spots of the respective sulphides were observed on the spleen, the under surface of the liver, and the portion of the peritoneum posterior to the stomach—*yellow*-coloured in the case of arsenic; *red* in the case of antimony; and *black* in the case of mercury. Each of the metals was likewise discovered by chemical analysis in the liver, spleen, and left kidney. . . . After forty-four days' burial, the deposit of the different sulphides was found to be much more decided, in all three cases being noticed on the upper as well as on the lower surface of the liver, together with the spleen (as in the first experiment); also over the intestines, the omentum, and the kidneys; and, in the case of the arsenic, extending as low down as the fundus of the bladder. By chemical analysis, the poisons were detected in the spleen, liver, and both kidneys. After fifty-nine days' burial, the results were found to be very similar to those last mentioned, only more decided, both as regards the quantity deposited on the various organs in the form of sulphides, and that discovered by chemical analysis."

Dr. Reese draws attention to the interesting experiments of M. Seolosuboff, of Moscow, which go to show that, in dogs and rabbits poisoned by arsenic, this substance is deposited in the brain and spinal marrow in far larger quantities than in the liver and other organs. As this may presumably be the case also in the human subject, the author very properly suggests that, in all doubtful cases of poisoning (especially *metallic* poisoning), the discovery of the toxic agent in either of the great nerve centres would settle the question between ante- and post-mortem poisoning; "since it is hardly conceivable that a poison introduced into a body after death could penetrate by imbibition within the cavity of the cranium or spinal column."

BELLEVUE HOSPITAL MEDICAL COLLEGE, CITY OF NEW YORK.

SESSIONS OF 1877-'78.

THE COLLEGIATE YEAR in this Institution embraces a Preliminary Autumnal Term, the regular Winter Session, and a Spring Session.

THE PRELIMINARY AUTUMNAL TERM for 1877-1878 will open on Wednesday, September 19, 1877, and continue until the opening of the Regular Session. During this term, instruction, consisting of didactic lectures on special subjects, and daily clinical lectures, will be given, as heretofore, by the entire Faculty. Students expecting to attend the Regular Session are strongly recommended to attend the Preliminary Term, but attendance during the latter is not required. *During the Preliminary Term clinical and didactic lectures will be given in precisely the same number and order as in the Regular Session.*

The Regular Session will begin on Wednesday, October 3, 1877, and end about the 1st of March, 1878.

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The Spring Session consists chiefly of Recitations from Text-books. This term continues from the first of March to the first of June. During this Session, daily recitations in all the departments are held by a corps of examiners appointed by the regular Faculty. Regular Clinics are also given in the Hospital and in the College building.

Fees for the Regular Session.

Fees for Tickets to all the Lectures during the Preliminary and Regular Term, including

Clinical Lectures	\$140 00
Matriculation Fee	5 00
Demonstrator's Ticket (including material for dissection)	10 00
Graduation Fee	30 00

Fees for the Spring Session.

Matriculation (Ticket good for the following Winter)	\$5 00
Recitations, Clinics, and Lectures	35 00
Dissection (Ticket good for the following Winter)	10 00

Students who have attended two full Winter courses of lectures may be examined at the end of their second course upon Materia Medica, Physiology, Anatomy, and Chemistry, and, if successful, they will be examined at the end of their third course upon Practice of Medicine, Surgery, and Obstetrics only.

For the Annual Circular and Catalogue, giving regulations for graduation and other information, address Prof. AUSTIN FLINT, JR., Secretary Bellevue Hospital Medical College.

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Contributors who wish their articles to appear in the next number are requested to forward them before the 1st of May.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies (not exceeding *fifty*) will be furnished to authors, *provided the request for them be made at the time the communication is sent* to the Editors.

The following works have been received:—

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The Science and Art of Surgery, being a Treatise on Surgical Injuries, Diseases, and Operations. By JOHN ERIC ERICHSEN, F.R.S., F.R.C.S., Surgeon Extraordinary to Her Majesty the Queen, etc. Revised by the author from the 7th and enlarged English edition. 2 vols. Philadelphia: Henry C. Lea, 1878.

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ERRATA.

In the number for January last—

Page 165, 11th line, *after* "country" *insert* "whose statistics are uniform as to nomenclature, and whose deductions are, therefore, interchangeable, and, if faulty, uniformly so."

Page 256, 9th line, *for* "about 5 ounces" *read* "about 3½ drachms."

" 11th " "about 7 ounces" *read* "about 5 drachms."

" 12th " "17½ ounces" *read* "13 drachms."

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THE
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ARTICLE I.

THE OPERATION OF GASTRO-HYSTEROTOMY (TRUE CÆSAREAN SECTION), VIEWED IN THE LIGHT OF AMERICAN EXPERIENCE AND SUCCESS; WITH THE HISTORY AND RESULTS OF SEWING UP THE UTERINE WOUND; AND A FULL TABULAR RECORD OF THE CÆSAREAN OPERATIONS PERFORMED IN THE UNITED STATES, MANY OF THEM NOT HITHERTO REPORTED. By ROBERT P. HARRIS, M.D., Member of the Philadelphia Obstetrical and other medical societies.

EIGHT years ago, we commenced to collect the records of the Cæsaean operation in the United States, and in February, 1872, published the result of our labour in a *resumé* of 57 cases, and a tabular statement of 59, which may be found in the 4th vol. *Am. Journal of Obstetrics*. We are now to fulfil a promise of a more extended research that we made at that time, a work of no little labour, when the extent of our country and its sparsely settled condition in many sections are considered. We were fortunate in having access, through the libraries of the College of Physicians and Pennsylvania Hospital, to a large proportion of the published cases; and what these did not supply have been furnished by private collections. When these sources failed, we entered upon an extensive correspondence with leading physicians in every State in the Union, and especially with active members of State medical societies, and by their aid canvassed the country in all directions from Maine to Texas, and Virginia to California. In this way more than 28 per cent. of the cases in the tabular record have been rescued from oblivion. Care was taken to reject all reports of operations, in which the uterus had not been incised, as many such were sent to us under the call for *Cæsaean* cases. We could, no doubt, have doubled our list, and materially diminished the relative mortality by accepting them; but they do not belong to the

Cæsarean operation, and would have very much lessened the value of our statistics.

It might be thought that gastrotomy, or more correctly *etronotomy*, performed after rupture of the uterus, for the removal of the fœtus, and its secundines, should prove to be a more severe and fatal operation than gastro-hysterotomy, but such does not appear to be the case, and for two reasons, viz. :—

1. Where the operation is performed, the necessity for promptness is generally realized by the accoucheur and surgeon.

2. The subjects of rupture are as a general rule much more robust, and in much better health than those who submit themselves to the Cæsarean section, many of whom are rickety dwarfs, or the subjects of cancer, pelvic exostosis, tumours, etc.

The abdominal cavity is quite tolerant of the presence of blood and liquor amnii for a limited period, and where they are carefully removed under the knife, there appears to be less cause for apprehending peritonitis, than there is where gastro-hysterotomy has been performed upon a patient exhausted by long labour. Promptness of action in either case vastly diminishes the mortality, and in our own country causes the rate of success to very nearly approach that claimed for ovariotomy.

When we entered upon the research which has resulted in the preparation of this paper, we were actuated by a desire to disabuse the minds of American physicians of the impressions made upon them by the teachings of most of the obstetrical works found in their libraries in the English tongue: which, with few exceptions, either emanate from Great Britain, or are biassed in favour of trans-Atlantic opinions, touching the dangers of the Cæsarean operation. And whilst, of course, desirous of being able to make as favourable a report as possible, we have laboured with all diligence to obtain records of cases without any regard to their success or failure, as we shall be able to demonstrate before we conclude. If statistics are to be valuable, they must be unbiassed, thorough, and complete, and no pains or trouble are to be esteemed too great in accomplishing this end. We are quite sure that many of our correspondents will give us the credit at least of perseverance, in some of our searches after unrecorded operations. We might have made a more favourable report, if we could have been satisfied with the records already published, but we were determined to reveal as much of the whole truth as it was possible to obtain, and in so doing, have increased the mortality by 16 per cent. We have indeed heard of unrecorded favourable cases sufficient to cover this, but are unwilling to accept of any reports, that do not give the year, and certain definite points, coming from reliable authority.

The statistics of Great Britain and Ireland, as prepared by Dr. Radford, of Manchester, show a frightful mortality after the Cæsarean section, and the opposition to the operation on the part of English obstetricians and

surgeons is not to be wondered at. We have extended the record of Dr. Radford, but it will be most convenient for our purpose to take the first hundred cases, as the few that are over are scarcely any more encouraging. The one hundred operations saved the lives of but 16 women, although 57 children were removed alive. Of 46 cases in which the pelvis was contracted from malacosteon, but 5 were saved, and of 21, the result of rickets, but 1 was saved. 24 women were operated upon within the first twenty-four hours after the commencement of labour, and 7 were saved. Of the 16 cases that resulted favourably, 5 were deformed from malacosteon, 1 from fracture of the pelvis, 1 from rickets, 1 had cancer, 2 exostosis, and 1 ankylosis of hip-joint.

There is an unaccountable fatality that attends this operation in Great Britain, which is far in excess of that reported by continental authorities, and found to result in our own country. Of the first 34 on the English record, but 2 were saved, against 19 of the first 34, on our own table. This difference has been thought by some to be due to malacosteon, a disease of exceedingly rare character in the United States, so much so, that many physicians in large practice have never met with a case: yet this disease prevails on the continent, and has been one of the causes of difficulty in the operations performed by Frederick Winckel, who has operated more frequently, and with better proportionate success, than any man living. It is true that he regards a case of osteomalacia as much less promising than one deformed from rickets; still he has saved several, by his plan of early operating. By this he secures prompt uterine contraction, and has never used a uterine suture, or had a death from hemorrhage. But the cases of rickets appear if anything less favourable in Great Britain than those of malacosteon. There must, therefore, be something at issue, either in the climate, or the habits of the women operated upon, to account for 17 deaths in 24 cases in which there was no unreasonable delay. In our own record we have 37 operations upon subjects with deformed pelves, of whom 15 were dwarfs, and nearly all had been affected with rickets in early life. There was no instance of mollities ossium among them. The dwarfs varied in height, from 3 feet 2 inches, to 4 feet 6 inches, two of them weighing but 65 and 70 pounds respectively, and were certainly not promising subjects for so severe an operation: yet of the 37 women, 17 were saved, and several are still living and in good health. Only 11 of the 37 had the advantage of being operated upon before the close of the first day of labour, and seven of them were saved.

Dwarfs.—There were, in all, sixteen dwarfish subjects operated upon in the United States in the past forty-two years, all with pelves deformed by rickets, except two, one being infantile, and the other having an exostosis from the sacrum, and it will be of interest to mark the result in their cases. Seven had the advantages of an early operation, and four of them were preserved; whilst of the nine who were operated upon, after more or

less delay beyond twenty-four hours of labour, eight died, and but one recovered. Of the sixteen children, ten were saved. The five dwarfs saved, were 3 feet 9 inches—3 feet 11½ inches—4 feet 6 inches—4 feet—and 4 feet 6 inches, respectively in height, and were all operated upon at an early period but one, who had been in labour thirty-eight hours. All of their children were saved but one, which was delivered alive, but being a deformed fetus soon died. Can there possibly be any better evidence than this, of the value and importance of promptness, where the Cæsarean operation is to be resorted to, to save the life of the mother? We do not require to consult the statistics of the Old World to know what are the prospects of recovery in the New. These are valuable in some respects, but should not have undue weight in forming the opinions of American accoucheurs and surgeons. The subjects of the operation in all countries have been very largely derived from the lower classes, and it is a question to be considered what amount of influence upon the prospective results may be due to their diet, mode of living, and drinking habits. We know by hospital experience, that excessive indulgence in stimulants, and particularly in malt liquors, very markedly unfits the subject for safely enduring an injury, or a surgical operation. No nation (although the inhabitants are by no means generally robust or well fed), appears to be better prepared to endure with safety the most severe operations of surgery, than the Chinese, in their own country. And although much is no doubt due to an innate constitutional immunity, a great deal is also to be attributed to their freedom from intemperance in the use of alcoholic stimuli. We are inclined to believe, that much of the want of success in the Cæsarean operation in Great Britain, depends upon the beer-drinking habits of the peasantry,¹ else why should skill and promptness be so entirely thrown away in the great majority of cases in which they have been exercised?

In speaking of early operative assistance we have been obliged of necessity to establish a limit of time, and have made it twenty-four hours from the commencement of labour; but this by no means marks the measure of promptness on the part of the surgeon, who may lose his patient by the exhaustion consequent upon delay within this period.² The rule of Winckel, to operate before the membranes are ruptured, is an important one, where the obstacle to delivery is known early enough, which is too rarely the case. In both of Dr. Gibson's operations upon Mrs. M. Reybold of this city, this plan was pursued, and in neither was the patient exhausted by previous suffering: the reports do not state the time, but we have learned that ten hours of labour had passed when the second operation was performed. In both instances was the operation one of *election*, the woman having

¹ See favourable cases of Dr. James Edmunds, *Med. Times and Gaz.*, Jan. 5, 1861; *Med. Press and Circular*, Nov. 1876, p. 445.

² See Case 13 in table.

twice before at great risk and after hours of suffering, been delivered under craniotomy. These two successful operations of Prof. Gibson have been very valuable in their instructive influence upon American surgeons, and we can trace this effect in 6 operations with 4 recoveries, that occurred at a much more recent period, in the hands of graduates of the University of Pennsylvania, whose students were each session for several years, shown by Prof. Hodge the two Cæsarean children of Mrs. R. in illustration of his lecture upon "Gastro-hysterotomy." At the time of Prof. Gibson's first operation in 1835, there was very little known as to the prospective results of the Cæsarean section in this country, and the experience of British authorities was anything but encouraging. It required, therefore, a considerable degree of boldness, in an operator undertaking the case, especially as it is said that Dr. Physick was unwilling to risk his reputation upon it. The triumph and credit were, therefore, all the more merited by Prof. Gibson. In reviewing the history of the operation prior to that period, we find 35 British cases with 33 deaths, and 6 American ones with 2 deaths. It is possible that the favourable results in two of the latter may have been known to Prof. Gibson; but Dr. Nancrede, who was accoucheur in the case, and subsequently its reporter, and who seems to have endeavoured to search out the American records, does not appear to have heard of the operations of Dr. Estep, of Ohio, in 1833 and 1834;¹ Nos. 5 and 6 in our tabular record. The chief encouragement he had, was in the record of Baudeloque, and a belief that the danger would be materially lessened by operating before the membranes were ruptured. Burns' English record of 23 cases and 22 deaths gave him but little to hope for. We are inclined to exalt the successful surgeon, but certainly great credit is also due to Dr. Joseph G. Nancrede for his management of the case, both before and after the operation. His was the first case in our country to demonstrate the advantages of operating, before the patient began to feel exhausted from the duration of her labour, and the first in which both mother and child were saved.

Cases operated upon more than once.—Besides Mrs. Reybold, there were four women operated upon a second time, and one a third time, viz., Nos. 5 and 6, before referred to—woman saved. Nos. 17 and 22, woman saved in first, and the child also in the second. Nos. 29, 31, 35, woman saved in first, child likewise in second, and woman lost in the third, but child saved. Nos. 36 and 55, woman and child saved by first, and both lost in the second operation. Nos. 45, 49, woman and child saved in first, and both lost in second; making in all, thirteen operations on six women, with the loss of three women and five children. No. 35 died of peritonitis after the third operation, which was performed early. No. 49 died of the same disease, probably induced by the removal of her ovaries,

¹ They were not reported in print until 1836.

as she had recovered from a former operation. No. 55 was affected with dysentery at time of operation, when five months pregnant, and died of entero-peritonitis. Eight of the operations were performed early, and all resulted favourably but one (35).

Causes of Death in the Women.—The “*fons et origo*” of fatality may be found, in a large proportion of cases, in the exhausted state of the patient at the time when the operation is commenced. Death is generally attributed to *peritonitis, prostration of system, septicæmia, etc.*; but it is well known that these are largely determined by the previous condition of the woman. Peritonitis, like erysipelas, is often an adynamic type of inflammation, and as we sometimes see repeated attacks of the latter in feeble subjects, or in paralyzed extremities, so we find the former attacking those who have been first worn out by a long tedious labour, and attempts to deliver by the hand or craniotomy, and then operated upon by the abdomino-uterine section. With a pulse of 130 or more per minute, as we often see recorded, it is not to be wondered at that the patient dies.

Although but 17 out of 71 operations were performed early, there was manifested but little disposition on the part of our surgeons to add to the delay already existing, after they became satisfied of the necessity of operating. There is a great reluctance on the part of many to perform the operation, and it has often been declined when success might have attended it; but we find no such instance of censurable postponement as the following, reported by an American eye-witness, in the first number of the *Philad. Med. Examiner*: On November 29, 1857, a woman of about four feet in height, and twenty-five years of age, presented herself in labour to M. Cazeau, as he was on his morning round at the Hôpital Clinique in Paris. She was immediately examined in a private room; pelvis found much deformed, and child alive. A consultation was called, and gastro-hysterotomy decided upon; but instead of performing it at once, it was postponed until the next morning at half-past eight o'clock. By this time the woman was exhausted by a labour of thirty-six hours, and although the operation was well performed by M. Moreau, the child was lost, and the mother died during the following night. This result is certainly not to be wondered at. We should be glad to be able to represent this as an isolated case, but European reports, especially British, give instances where the delay was quite as unaccountable.

Peritonitis.—Of 37 deaths, 16 were attributed to this cause; 3 being operated on early, and 13 after a labour of from thirty hours to several days. In four cases craniotomy was first performed; in four, much time was lost by their being in the hands of ignorant midwives. No. 3 was doing well about ten days; dined on animal food, with cider; violent peritonitis set in, and death resulted in forty-eight hours. No. 9 got up very imprudently on fifth day, and died on the 8th. No. 49 had her ovaries removed at the time of the operation, under direction of the planter to

whom she belonged, to secure her barrenness; hence, no doubt, the fatal result. No. 63 was considered almost hopeless at the time of operation, from long delay under a midwife, and craniotomy. And No. 64, after forty-four hours' labour, had a profuse hemorrhage under the knife, and died in forty-two hours.

Exhaustion and Nerve-shock.—It is difficult to draw the distinction, in many cases, between these conditions and peritonitis, as they not unfrequently coexist. The evidences of *violent* peritoneal inflammation appear to have been seldom found in those cases which were examined after death, the physical conditions existing prior to the operation no doubt moderating the severity of the inflammatory action. Where patients have died in a few hours, peritonitis has not been developed; but in No. 62, who lived but twenty hours, there was general peritoneal congestion without effusion, and several ounces of lochia were found in the abdominal cavity.

Eight cases of death were attributed to *exhaustion*, all after long labours but the one just referred to. No. 14 was in labour several days, and her case was considered almost hopeless at the time of the operation; she died in an hour. In Nos. 38 and 48, much valuable time was lost under midwife mismanagement. In the latter, which was an arm presentation, the midwife had ruptured the membranes, and given ergot; she survived the operation twelve hours. In No. 30, after a labour of fifty hours, and a failure in an attempt at craniotomy, death resulted in four hours after the operation. No. 53 was operated upon after long delay, did well for three days, was frightened and excited by a quarrel in her room, which she attempted to quell, and died in twelve hours.

Septicæmia.—Uterine phlebitis and septic poisoning would no doubt have taken a more prominent place among the causes of death, if autopsies had been generally, instead of rarely performed. There would appear from the history of Cæsarean cases to be a marked opposition, on the part of relatives and friends of those who die after the operation, to having their bodies any further subjected to the knife; and hence post-mortem appearances are seldom recorded, and, when given, are rarely minute in character. Nos. 51 and 59 only were attributed to septicæmia; the latter being a case in which first an extra-uterine and then an intra-uterine fœtus were delivered alive, and were living some time afterward; no autopsy. Child of No. 51 still living (Nov. 1877).

Convulsions.—Three cases died in convulsions. No. 25 was in labour seventy-two hours when the accoucheur arrived; was seized with eclampsia during an examination; pelvis much deformed; no abatement of convulsions after operation; died in twelve or fifteen hours. No. 37 did well four days; went into convulsions from indiscretion in diet (eating dumplings), and died in two hours. No. 65 had Bright's disease, and died in sixty hours of uræmic poisoning.

Strangulation of Intestines.—This is very rarely a cause of death, but is mentioned as such by several authors, the obstruction resulting from a loop of intestine passing into the uterine wound. Both this and omentum have at different times been found thus constricted. No. 60 was no doubt one of intestinal strangulation effected in this way, although the operator was somewhat at a loss to account for it, as no autopsy could be secured. Strangulation may also be produced by the abdominal wound. Baudelocque mentions finding a portion of intestines strangulated in the uterine incision, and advises, in case the symptoms indicate this condition, that the abdomen should be opened, and the bowel withdrawn. A uterine suture would possibly have saved the life of Case 60, as she does not appear to have had the symptoms of peritonitis, but simply those of intestinal obstruction.

Hemorrhage from Incomplete Closure of the Uterine Wound.—Death, simply from loss of blood, appears to be very rare, and we have found no instance in this country of dying in the operation. The loss of blood during the operation is generally moderate, and easily controlled. A large uterine sinus will sometimes bleed profusely, and so will the placenta when cut into, or its place of attachment, when laid bare beneath the line of incision. The uterus, after death, is sometimes found filled with a coagulum, extending through the gaping incision, and into the abdominal cavity, associated with lochial discharge and puruloid fluid; but in such cases there are generally symptoms of local or general peritonitis, and occasionally uterine softening or gangrene. The uterus, after a long and exhausting labour, sometimes becomes of a liver or chocolate colour, and appears, when incised, to have undergone a material structural change. It is not to be wondered at, that a gangrenous gaping wound should be found after death, or that septicæmia should terminate the life of the patient. *To avoid uterine inertia or complete atony, and an unfavourable closure of the incision in the uterus, an early, and, if possible, an elective operation should be performed.*

Causes of Death in the Children.—There were 73 children delivered from the 71 Cæsarean cases (two bearing twins), and of these 36 were dead, and 37 alive, of whom 5 died within ten days—saving, therefore, 32. This is a much greater mortality than has occurred in European, and especially Continental, cases. The causes of death were mainly more or less connected with long delay;¹ for in the seventeen early operations, all of the children but one were removed alive, and fourteen of them lived, some of them to have children of their own in after life. Of the 36 children removed dead from the uterus, 6 had been destroyed by instruments; 2 were premature; 3 had died from disease in utero; 8 perished from long delay under the management of ignorant midwives; 1 from the same,

¹ See special tabular statement in this Journal for July, 1872, page 290.

under a charlatan; 6 from impaction in the pelvis and long labour; 4 from expectant treatment too long relied upon before operating; 2 from neglect, the mother being operator, and delivering herself on a snow-bank; and 1 not stated. Although not directly reported, there are reasons for believing that in one-third of the cases the long delay is to be attributed to the ignorance of midwives, many of the women being slaves.

Obstacles to Delivery through the Pelvis.—In 37 women the pelvis was more or less deformed, chiefly from rickets, and, as we have remarked before, in no case from malacosteon, almost an unknown disease in our country; and in two cases the arm presented as an additional complication. In 9 cases the soft parts were so occluded or contracted that manual and instrumental entrance was impossible. In 6 there was exostosis within the pelvis; in 2, tumours formed an obstruction below; and, in 2, within the uterus. In 5 cases the foetus was impacted transversely in the pelvis, nothing being said of the latter being deformed.

In No. 28, the pelvis is reported as fully three inches in the conjugate and transverse diameters. The propriety of the operation is very questionable. No. 43 was badly managed by a *midwife*, the uterus empty of fluid, and foetus immovable. Every effort was made to deliver per vias naturales, but failed. No. 46 resembled it. No. 47 was like 43, and also under a *midwife*; liquor amnii evacuated sixteen hours before she called assistance. No. 48 resembled the last, and, to make matters worse, the *midwife* had ruptured the membranes and administered ergot.

No. 52, with *shoulder presentation*, gives a good example of the difficulties of foetal impaction. Labour had lasted sixty hours, and liquor amnii had been long evacuated. The arm was amputated; version by vertex and feet both tried in vain, and evisceration of thorax and abdomen with like result, owing to the distorted and impacted state of the foetus; and yet this woman had been delivered naturally of seven children.

No. 41 is reported as a case of *impacted head*, the position being simply an occipito-posterior one, and the pelvis not deformed. As the head was said to have been visible at the vulva for twenty hours, we cannot understand why neither the forceps nor craniotomy was resorted to. Dr. Cooper had diagnosed twins, although there was but one foetus. We see nothing to justify the operation in this instance.

In these seven cases of impaction, although the children were all lost, all the women were saved but one, who died of exhaustion in twelve hours (No. 48).

No. 27 is also a case of *impacted head*; but as the operation was performed quite early, and the mother and child were saved, we cannot see why instruments were not used, if attainable, and the operation thus avoided. We have but a very imperfect record of the case. As the operation has been performed by a razor, a butcher-knife, or the imple-

ments of a pocket-case, which in a sparsely settled region are more easily obtained than forceps or craniotomy instruments, it may be that the necessities of the case left no choice of action but the one adopted. It is one thing to manage such cases in a city, where appliances and competent assistants are readily attainable, and quite another in a wild and thinly settled country, perhaps many miles away from your own home. All the operations in our record performed for impaction of the fœtus, amount to nine in number, and resulted in saving seven of the women. It is an easy matter to sit quietly at home in a large city, and say what should have been done under the rules of science in these cases; can it be promised that the results would have been more favourable? We well remember a parallel case that occurred a number of years ago. A prominent obstetrician of this city was called to see a young German woman in violent labour, and suffering severely from delay in her delivery. Failing of success, he called in consultation two of the most skilful men of their day, and a plan of action was agreed upon. The woman had been in labour four days, and the child was still alive. By much perseverance and after long manipulation the fœtus was removed dead, *per vias naturales*, under the most approved method of treatment; but the woman died of exhaustion the next day. We do not say that gastro-hysterotomy should be resorted to in such cases, as there is a possibility of delivery without it; but when we come to the question of relative safety to the mother, it is a matter for grave consideration which of the two plans is shown by statistics to be the less dangerous, and to promise the more favourable results. In our own country we believe that the Cesarean operation would be preferable to and less dangerous than that of embryulcia, in cases where the patient has been long in labour, and to whom the immediate relief of the knife is all important; and that the shock is less dangerous from the incision of the uterus than the exhaustion and injury of the tissues resulting from a long, tedious extraction. In the former there is a danger of death only, whilst in the latter, if this is escaped, there are left in many cases the frightful results of inflammation and destruction of tissue, to which death might be thought preferable.

Improvements in destructive instruments have, in recent days, increased the facilities for removing the fœtus in cases of extreme deformity of the pelvis, but it is very questionable whether it would not be better in *all* instances, where the conjugate diameter of the superior strait is less than two and a quarter inches, and in *many* of even two and a half inches, to resort to the Cesarean operation as early in the labour as possible. The late Dr. Parry, of this city, admitted to be a man of skill, was nearly seven hours in delivering a fœtus through a conjugate diameter of two inches; the woman had an attack of peritonitis, and narrowly escaped death; and the doctor resolved, in case she should again become pregnant, to deliver her by gastro-hysterotomy, believing it to be less dangerous and every

way preferable. Having his mind directed by this case to the question of relative mortality in Cæsarean and craniotomy subjects, he prepared a valuable article, entitled¹ "The Comparative Merits of Craniotomy and the Cæsarean Section in Pelves with a conjugate diameter of two and a half inches or less," in which he clearly shows that, in *skilful hands*, the former has no advantage over the latter in the record of recovery, whilst the sequelæ of the first are far more to be dreaded.

Dr. Parry appends to his paper a tabular record of seventy cases, just one less than our own, with a fatal result in twenty-six women, or in $37\frac{1}{2}$ per cent. It will be remarked by any one examining it, that the cases, with scarcely an exception, were under the care of obstetricians of well-known reputation, residing either in cities or large towns, among them being such names as Ramsbotham, Hicks, Greenhalgh, Barnes, Dubois, Radford, C. D. Meigs, and Fordyce Barker. This is, therefore, as fair a showing for themselves as the opponents to gastro-hysterotomy have any right to demand, and a far more favourable one than a general statement like our own would be, if made without any regard to special skill or advantage.

To make a fair comparison between our record, and that of Dr. Parry on craniotomy (*under skilful management*), we have selected the cases belonging to cities and important towns, where, as a general rule, they would be supposed to have had the best advantages of treatment: and find them to number 32, with a saving of 20 women and 16 children, or a loss of $37\frac{1}{2}$ per cent. against the $37\frac{1}{2}$ in his table, which is almost an exact balance, without counting the advantage of having saved 50 per cent. of the children. Or take the converse, and we show a saving of $62\frac{1}{2}$ per cent. of women, against $62\frac{6}{7}$ per cent. under "craniotomy in pelves having a conjugate diameter of $2\frac{1}{2}$ inches or less." This is a very remarkable result, when we consider that by this method of exclusion, we count but 9 out of 17 early operations, and include 3 out of the 5 deaths which occurred in the 17. It was certainly not in the large cities that the most favourable cases were undertaken, for 8 out of 17 early sections were made in country places, many of them very remote from the centres of civilization. In such localities men of remarkable skill and attainments are sometimes found in our country, as we have been made conscious of, since we commenced the preparation of this paper; but we secure a higher average degree of skill, by confining our calculation to the more favoured localities.

By another mode of calculation, we select the cases that were undertaken with the great advantage of an early resort to the knife, excluding all that had been in labour more than twenty-four hours, and we find but seventeen reported of this variety. With this advantage, and without

¹ Am. Journ. of Obstetrics, vol. v. 1872, p. 644.

any very marked superiority of surgical skill, except in a few instances, we find a saving of life in 70 per cent. of the women, and 80 per cent. of the children. Now apply the best skill of the country to a succession of early operations, and what is to prevent a result nearly or quite on a par with ovariotomy?

Our calculations of success are based upon our own statistics, and have no reference to those of any other country. In Great Britain, as before-mentioned, the views of the profession are generally adverse to the Cæsarean operation, because of its fearful mortality: Dr. Greenhalgh of London is one of its few advocates, and became such, through an unfortunate experience in craniotomy in small pelves, having lost five out of six women, and saved the remaining one after she had had an attack of peritonitis. Dr. Greenhalgh visited Dr. Frederick Winckel of Germany, saw some of his cases, and heard of his remarkable success; but his own eight operations have resulted in death to all the women but one, although he had the satisfaction of having saved five of the children. This mortality is not much to be wondered at, except in regard to two of the cases. Five of the women were in a diseased condition, three from cancer, and two from progressive softening of their bones (malacosteon). Three were better subjects, having been deformed by rachitis in childhood, but in only one of these was the operation performed early. In one instance, we notice that the pulse beat 140 before the operation, and 180 after it: and it is not surprising that death resulted in eighty hours, when we learn that the woman had been four and a half days in labour. Two cases operated upon after six and twelve hours of labour respectively, one of rickets and the other malacosteon, were both fatal. With this return for care and skill in operating, it is very natural that the operation should be looked upon as "the forlorn hope," and that premature delivery by craniotomy should be recommended as a substitute. We are only just assuming an independence of judgment in regard to the propriety of gastro-hysterotomy, and beginning to understand that here at least there is a very fair prospect of success, if the operation is performed before the patient becomes exhausted by long labour. Our English medical brethren are too apt to think that their want of success will be attributed to a relative deficiency of skill, and on this account are disposed to doubt the accuracy of the statistical statements of other countries: when, if there is any fault in their surgery, it lies at the door of too long delay, in which respect this country is by no means in advance in the measure of time, although there may have been a less disposition to procrastinate, after the operation was deemed inevitable.

The proportion of early operations in Great Britain and Ireland, as well as in the United States, has been about 24 per cent., there being but a small fractional difference in favour of the latter. In the former, with no question of skill in management, there was a loss of $71\frac{1}{3}$ per cent. and in

the latter but 30 per cent. We must, therefore, in all charity, attribute our advantages to the climate, and the character of the subjects our operators have had in charge. Although British statistics do not show it, there ought to be a decided difference in favour of rachitic subjects, who suffer from the effects of a former, over those with malacosteon, in whom there is a present disease; and were all cases operated upon early in labour, we should expect to see this difference made manifest. There should also be a difference under the same advantages, in cases of the latter disease, according to the stage of progress at the time of the labour. Fortunately we have not this disease to contend with; but as the country becomes more densely populated, and the low poor, more degraded, and poorer fed, we shall have more cases of rachitic deformity in our large cities. We see the evidences of it in our almshouses, and among the children playing in the small streets and lanes of our cities, particularly those of African descent. We have not as yet noticed the peculiar walk, produced by a rachitic pelvis, so often met with in the streets of Paris, in short, but healthy looking white women, but possibly we may have this condition developed as our cities become older, in which event, the question of craniotomy or gastro-hysterotomy will more frequently present itself to the mind of the accoucheur.

The Operation.—Both the history and the method have been so often examined into and described, that we shall confine our discussion to a few points of interest. It is a curious fact, if it be such, that the first Cæsarean operation on the continent of Europe was performed by a cattle-gelder; that the first in the United Kingdom of Great Britain and Ireland was by a midwife; and that the first in Jamaica, as well as in the United States, was done by a woman on herself; at all events these are the first on record as far as known at the present day. It has been said that an operation was performed in 1491, nine years before that of Jacques Nufer, the gelder on his own wife; but the statement is not at all reliable, as many also think with regard to the Nufer operation itself.

After various changes in the direction and locality of the abdominal incision, the world of surgeons finally settled down to that in the linea alba, or, as some prefer it, through the edge of the rectus abdominis; and nearly all of the operations in this country have been done in this way; No. 25 was performed in the linea semilunaris, and No. 13, in a dwarf of three feet six inches, was, to obtain space, done by the oblique incision. Where the recti muscles have become separated by abdominal distension, as they are sometimes by several inches, it becomes of more than usual moment where the incision should be made to obtain a secure union, and avoid hernia, or the giving way of the parts in a future pregnancy, as has happened. It is in such cases that it becomes most important to incise through the edge of the rectus.

It is a question whether the use of anæsthetics is not in some instances

an obstacle to success in this operation, by producing attacks of vomiting, and causing inertia of the uterine muscular tissue. By the ether spray the first may be avoided, but the method is not an advisable one to be applied to the uterus itself.

As the prevention of intestinal protrusion is an important one, and requires that the assistants should have full command of the abdomen, so as to make a properly directed and even pressure, it has been proposed by Prof. Edward W. Jenks, of Detroit, and carried out in an operation successfully performed by him last June, that the surgeon should take his stand between the lower extremities of the patient, so as not to interfere with the said assistants in their portion of the operation. Although this operation has been performed with success without medical assistance, and by means of a very imperfect armamentarium, those who have done it have very much felt at the time the want of both. In a few instances, under competent assistance, the intestines have been kept entirely out of view during the operation.

Uterine Sutures.—For a long period there was a decided difference of opinion as to whether the abdomen should be sewed up, or the lips of the wound held in apposition by adhesive strips; and the question is still in a measure unsettled, whether the wire stitches should avoid or be passed¹ through the peritoneum; but the vital question of the day is, Shall the uterine wound be left to nature, or sewed up, and, if the latter, how and in what way shall it be done? This is not a new question, but a very old one revived, which for some reason was for a long period lost sight of. No doubt it was at one time occasionally employed, but little has been written of it in the imperfect records that have been handed down to us. When Mr. Spencer Wells proposed the use of sutures in the uterus, before the London Obstetrical Society at its meeting on March 4, 1863, he did not appear to be aware that the plan was by no means a new one, nor does the record of the proceedings show that any other member present knew that this was the case. In 1865, both Spencer Wells and Sir James Y. Simpson made use of sutures as proposed: the former tried a long uninterrupted silk one, and left an end out of the vagina, by pulling on which the whole was removed after several days; and the latter employed three sutures of iron wire. Of eight Cesarean operations that year in Great Britain, this of Mr. Wells was the only one not fatal. The woman was not in labour, and but five months pregnant, but her uterus had been punctured by a trochar in the operation of ovariectomy, and the evacuation of the organ was thought imperative.

In 1867, Drs. T. Beers Townsend, of New Haven, Connecticut, and D. Warren Brickell, of New Orleans, Louisiana, each employed uterine sutures in their respective cities, and both of the women are alive and

¹ Ovariectomists usually favour passing the wire sutures directly through the peritoneal coat.

well to-day; the first used three of fine hemp, and the second, six silver ones. Dr. Brickell, in a private communication, says that he had advocated the use of the uterine suture both in the Cæsarean operation, and in cases of rupture of the uterus, in his course of obstetrical lectures, as early as 1856, and had been somewhat ridiculed for what were considered rather wild opinions. From the record of his operation it would appear next to impossible that the woman could have been saved without closing the uterine wound, as there was no contraction, she having been in labour ten days.

Looking back in history we find no mention of the uterine suture for a number of years. Blondell, in his later edition¹ (1840), simply remarks that "suture of the uterus has not generally been hitherto employed." Searching over a long series of French and English authorities, we find with this exception no mention of the uterine suture ever having been used, the language of Cazeau that "the uterine wound demands no other precaution than that of being cleaned," being the character of direction usually given. In the comprehensive *Dictionnaire de Médecine*, par MM. Adelon, Béchard, Bérard, Bielt, etc. etc., Paris, 1834, we, however, find this reference: "The uterine wound does not demand any other care, although an unskilful surgeon did introduce sutures, which it was found necessary to remove."

In 1833 and 1834, Dr. Robert Estep, of Stark County, Ohio, performed two successful Cæsarean operations upon the same woman (Cases 5 and 6), and in his report of the same, we find this remarkable language: "I have made no mention of sutures applied to the wound in the uterus as recommended by some authors, and I take occasion to express unqualified disapprobation of their employment. The indissoluble suture I consider dangerous; *the animal ligature to say the best useless.*" Dr. Estep quotes no authorities, but for a backwoods surgeon, many of whom were by no means backward in knowledge, he appears to have been much better posted up than some of our contemporaries who have tried and been forced to abandon the catgut suture within the past ten years, for the simple reason that the knot will slip and open in any part of the body, where it is kept from becoming dry and hard.

Going back to the early days of our own record (Case 3), we find an exemplification of the old adage, "fools enter in where angels fear to tread," in an operation performed by a Virginia charlatan in 1828, in which he sewed up the uterine incision with two or three stitches. This man enjoyed quite a reputation among the country people in his vicinity, and although the operation in question was bunglingly done, there is every reason to believe that the woman would have recovered, but for an indiscretion in eating, before referred to.

¹ Principles and Practice of Obstetric Medicine. London.

Hull (1799), in his "defence of the Casarean operation," gave it as his opinion that the wound of the uterus had "very rarely been stitched." He recommended the glover suture, with higher end left out of the abdominal wound for its removal by traction.

M. Lebas (1769), of Moulleiron, France, during the period when the transverse incision was usually practised, operated upon the wife of a farmer after this method, incising the uterus in the same direction, and closing the wound in this viscus by three stitches. The woman recovered, although she had been three days in labour before the operation. (Hull, *op. cit.*) In the same year Martha Rhodes died of secondary hemorrhage, which might have been prevented by sutures. She survived the operation but five hours.

In the last eleven years there have been sixteen cases of Casarean section in the United States, and of these, ten were dressed with the uterine suture, and eight were thus treated out of the last ten operations. In No. 62 Prof. Sager used *four silver sutures* in the uterus of a dwarf, in which there was a small uterine fibroid in the incision, and much hemorrhage. The woman died in twenty hours, and the uterine wound was found gaping, allowing the escape of lochia into the peritoneal cavity. No. 64 was a case in which *one suture* was introduced by Dr. C. F. Rodenstein, and removed by Dr. De Marmon in thirty-six hours. The case was one of long delay, twenty-three hours being lost in waiting for assistance, and terminated in death, in forty-two hours, by metro-peritonitis. No. 65 was fatal by reason of Bright's disease in the last stage—*ten uterine sutures* of silk were used, as the wound gaped open, and their ends brought out at the lower end of the abdominal incision. No. 66 was also fatal, having been under the care of a midwife, and has already been referred to under the head of "Dwarfs." *Two silver sutures* were used on account of hemorrhage. No. 67 died shortly after the operation, from hemorrhage and exhaustion, *one silk uterine suture* was used to arrest the hemorrhage. No. 68 is also referred to in the section on dwarfs, as one of the successful cases; *one silk suture was inserted*. No. 69, in the same section, had *three silver stitches* used. Died in five days, and uterine wound found gaping. No. 71 was in labour seven days—*four silver sutures* inserted in uterus. Woman reported in excellent health quite recently—operation last June.

In the old world the suture has been repeatedly tested, and with varying results, during the last twelve years: silk, catgut, the same carbolized, silver wire, and caoutchouc covered with silk, as well as iron wire have been more or less experimented with. Theoretically, carbolized catgut was the great material, but after numerous trials, some successful, and more the reverse, even Veit of Bonn, and E. Martin of Berlin, have been forced to adopt the opinion so long since given of the animal ligature, by Dr. Estep, of Ohio, and quoted on page 327. In England, the operations of

Drs. Meadows, Routh, and J. W. J. Oswald were all failures, as the sutures became untied. Dr. Martin succeeded in a case in 1874, in which he arrested the hemorrhage by using fourteen catgut sutures, and treble knotting them; but failed in another, in the way it has often happened. Dr. Veit was successful on two occasions, using eight stitches in one and seven in the other, and was at one time a strong advocate of the method, which some of his countrymen claim to have been original with him; but it is immaterial, so far as holding a knot is concerned, whether the catgut be plain or carbolized. The theory of Dr. Veit was, that the animal suture became untied, and fell into the uterus to be discharged, which is no doubt a fact, but the change unfortunately takes place before union has commenced in too many cases. The experiences of London, Berlin, Prague, and Breslau have been so entirely adverse to the catgut, that we presume it has about run its day. Dr. Martin has openly condemned the animal ligature, and now advocates the use of silk. Dr. Gürtler¹ saved the life of a woman from severe hemorrhage by the use of three sutures of this material.

Dr. G. Silvestri,² of Trissino, in Vicenza, Oct. 2, 1873, in a successful operation, applied four uterine sutures of elastic thread covered with silk, passing the needle through the entire thickness of the organ; in applying each suture, the finger of an assistant was placed between it and the uterus, so as to prevent too great constriction of the tissues. The ends were cut off. His design was to keep the edges of the uterine wound constantly in apposition to secure union, and prevent the exit of fluid into the abdominal cavity. At the end of six months, the woman and child were reported in good health, and the uterus was found entirely mobile. Dr. Silvestri³ has, since his own operation, had an opportunity of witnessing an autopsy of a woman who died (cause not stated) in thirty hours after her uterus had been sewed up with silver wire, in which he found a complete union by the first intention. This has somewhat improved his opinion in regard to the latter material.

Of all the materials used, that of pure silver wire has the best record of success, and next to it silk or thread. There has been, and is still, a strong desire to secure some plan by which the foreign substance shall be removed after it is no longer required, either by absorption, or the hand of the operator; but all experiments, except with the long-tailed interrupted, or the glover suture, have failed. Dr. J. Beers Townsend (Case 56), in a recent letter, states that he placed his stitches so that they should work into the uterine cavity and be discharged. He does not write how, but it is to be presumed that he avoided entirely the peritoneal coat of the uterus, and tied simply the lining membrane and substance proper of the

¹ Archives für Gynæcol., vol. v. part 3, 1873.

² Archives de Tocologie, 1874, p. 189.

³ Arch. de Tocol., 1874, p. 703.

organ. The question has been asked: "What becomes of the silver wire?" We have seen but one record upon this point, but cannot recall the reference. The woman died at a period long after the operation, and the wires were found to have been covered in by an exudation of plastic lymph along the line of incision, which had become organized, forming a layer of new tissue over the seat of the wound. The wires had been twisted, cut off short, and bent down, which is the plan most highly recommended.

The experience of our country is as yet entirely too limited to determine whether the employment of the uterine suture is, or is not, an improvement in the method of operating. A few cases cannot decide the question, although some of them would seem to have been saved, when it would appear almost impossible that any other plan could have answered. The experience of England is not at all decisive, as there have been so few women saved; but the favourable result in the operation of Dr. John Parks, of Bury, Lancashire, in 1875, where four silver uterine sutures were used, would seem to show that the plan is not without value. Dr. Parks attributes his success to the following points: 1. The woman was of good sound constitution. 2. The operation was performed before the powers of nature were greatly exhausted. 3. Great care was used to keep the abdominal parietes in contact with the uterus. 4. The complete closing of the uterus to prevent any escape of fluid into the peritoneal cavity. 5. And keeping the patient constantly under the influence of opium.

Operations upon women long in labour, and some appearances presented after death, in Cæsarean cases have revealed three sources of danger, which have been the occasion of introducing the uterine suture into very frequent use. 1st. After a long labour, the uterus fails to contract fully, when the fœtus is removed, and the wound gapes widely, requiring to be held together to prevent the entrance of the intestines, and the escape of the lochial discharge. 2d. Secondary atony, or relaxation in a once contracted uterus, may be revealed after death, as the main cause of a fatal termination. A six-inch incision has been seen to contract at the time of the operation to an inch and a half, and been found relaxed to four inches or more, and widely open after death. 3d. Hemorrhage from the cut surfaces in the uterus, requiring pressure. Even where the uterine incision has been reduced to an inch and a half long, the wound has been found open, and much fluid in the abdominal cavity.

The fear has been that sutures in the uterus would greatly increase the danger of peritonitis; but the dangers to be encountered by using them are often not to be considered, in view of the greater risks in endeavouring to avoid their employment. In atony, or hemorrhage at the time of the operation, there can be no question as to the better safety of the suture.

Uterine Drainage.—In the early days of the Cæsarean operation, it was the common practice to pass a long drainage tent through the uterus

and vagina, and sometimes from the uterus through the lower end of the abdominal incision, for the purpose of favouring the discharge from the womb. This was afterward abandoned as a fruitful cause of danger, although Winckel still advocates it in a modified form, to keep open the os uteri. Recently the practice of drainage has been revived in a much more reasonable style, by means of the *tube à drainage* of Chassaignac, as will be seen in the following case.

Dr. T. Mayer¹ operated on a woman 30 years old, and 3 feet high (French measure), on account of an antero-lateral curvature in the lower third of the spine. The membranes were ruptured before the section, and the fluid drained off. No blood or fluid escaped into the cavity of the abdomen. The hemorrhage was checked by sponging with cold water, after which a drainage-tube was passed through the lower parts of both wounds, and the ends tied together over the pubes. This tube remained until the sixteenth day, with no symptoms of metritis, metro-peritonitis, or hemorrhage. The plan has been tried with success by several operators on the Continent, and without uterine sutures. Ice was used to check hemorrhage by contraction, and the whole operation completed as soon as possible. As the contracted state of the os uteri and vagina are frequently obstacles to the discharge of the lochia, the use of the drainage-tube would seem to be a valuable improvement, particularly as the caoutchouc appears to possess but little irritative property.

The condition of the uterus, where complete involution has taken place after gastro-hysterotomy, having been rarely examined post-mortem, an autopsy of Prof. Mayer, of Berlin, in a case eight years after the operation, will be of much interest. The section was made in 1813, by Dr. Hofrath Velten, on a woman of thirty-six, with deformed pelvis, and both she and child saved. The incision was through the linea alba, and vertically through the uterus, the wound in the latter being five (French) inches in length, and between the fundus and neck. Prof. Mayer found that the uterus had regained its natural form and size, being 2 in. 7 lines long, and 1 in. 10 lines across between the insertions of the Fallopian tubes. The place of incision was indicated externally by a furrow about one-fourth of an inch long. "The peritoneum adhered firmly to the substance of the womb at this point, and covered the furrow above mentioned. The edges of the wound through the uterus were extremely contracted and drawn inwards; the cicatrix on the inner surface was two lines and a half long."² The anterior wall of the uterus near the cicatrix was three lines thick, and the posterior, opposite to it, four. The patient stated after her recovery, that the ventral incising felt like drawing a red-hot needle over the skin;³

¹ Archives de Tocologie, Sept. 1874.

² Lond. Med. and Phys. Journ., 1829, page 83.

³ The same was said in 1769 by Martha Rhodes, of London, after her operation. (Med. Observ. and Inquiries, vol. iv., 1772, p. 265.)

that cutting the uterus was not at all painful: but that stitching the abdominal wound was the most severe step in the operation. It has been repeatedly stated that the operation was not any more severe than a violent natural labour, and this complaint of the sutures is a general one. The whole process is much less severe than the suffering during a protracted delivery by craniotomy and evisceration. We stated in the early portion of this article that we had found no instance in this country, of death under the operation, and thought then, that this success might possibly apply to the Old World, but have since learned that a woman died on the table at Guy's Hospital in 1875, just as Dr. A. L. Galabin was inserting the last catgut suture in her uterus. Long labour, shock, and hemorrhage caused her death. The case was one of vaginal occlusion, in which, from the impossibility of craniotomy, the Cæsarean operation was imperative, and should have been performed early, in which event, there would have been a reasonable hope of success.

In view of the record we have presented, there is clearly in our country a much greater fear of performing the operation in question than there ought to be. We have in this city over 800,000 inhabitants, and have had one operation in forty years. Will any one pretend to say that this was the only woman who required it? We are satisfied that in more than one instance, women have died undelivered, who should have had the chance for life which the Cæsarean section would have given them. Our surgeons, with the exception of a few who have devoted special attention to female surgery, know but little of what has been done in this particular operation in our country, and when called upon to decide in a case, are generally glad of some plausible excuse to escape the responsibility which they feel will be incurred, in case of the death of the woman. If midwives had a better knowledge, and accoucheurs were more prompt in action, the surgeon would be called earlier in the labour, and might then feel better encouraged to hope for success. When it is realized that an early operation offers two to one in favour of recovery, there will be less hesitancy in performing it. If the woman cannot be delivered per vias naturales, because of the risk, or impossibility of using destructive instruments, it matters not whether the cause of difficulty be perfectly understood or not, the fact of total inability to deliver should decide the point as to the question of resorting to the Cæsarean operation.

Fibroid and cancerous tumours of the inferior third of the uterus are sometimes serious obstacles to delivery, and may render it impossible to introduce either the hand or crotchet, or even make a satisfactory diagnosis of the difficulty. We hold that in such a case, it would be better to make an exploratory incision in the abdomen, than follow an expectant plan, with no hope of anything being accomplished by it. If left to nature, the fœtus will die and decay in utero, come away piecemeal with a horrid odour, and ultimately the woman will die, a perfect loathing to herself.

The danger of hemorrhage in tumour cases is very great, particularly if the growth lies under the usual point of incision. In one case reported in 1869 by Dr. Horatio R. Storer, of Boston, he felt obliged to remove the uterus, to prevent immediate death from loss of blood; the woman died in 68 hours. In these cases it is often possible to avoid the tumour, by making the uterine incision as in the operation a hundred years ago, through the fundus. In the two cases of uterine fibroid in our table, both women died, one of hemorrhage, and the other of septicæmia; one child was saved, now eleven years old.

Treatment of the Abdominal Wound.—Cold water dressing, either by moistened cloths, or the irrigator, have been used with advantage, and so has the antiseptic method of Lister. In No. 2 the os uteri being closed, all the discharges of the uterus escaped for two weeks by the abdominal wound, two inches of the lower part having been left unclosed for the purpose; and the parts were cleaned out daily by the use of warm soap-water injected by a syringe and catheter. Several cases on record were saved by reopening the abdominal wound above the pubes, and cleaning out accumulated discharges and secretions. In cases of occlusion, the parts should be opened during the operation, and kept so by a drainage tube or mèche.

American Cæsarean Cases, in Territory not belonging to the United States.

Judging by analogy, we should have supposed that the records of the West Indies would, like those of the sugar-growing States, have shown quite a number of operations; but a careful research fails to bring to light other than a very few cases. Dr. Benjamin Moseley,¹ in his work on tropical diseases, and the climate of the West Indies, says, "difficult labours are not common, and children are generally born healthy and strong, and are not subject to rickets or scrofula."

1. The only Jamaica² case we have found dates back to 1769, a year that was remarkable for its Cæsarean operations. This, like No. 1 in our table, was performed with success by a slave-woman upon herself. She had previously given birth to three children, and appears on this occasion to have been actuated by a frenzied impatience, and violence of temper, to obtain relief in the quickest way, without regard to consequences.

She was the property of a Mrs. Bland, a midwife residing near Kingston, and performed the operation with the hilt of a broken butcher-knife, cutting at one stroke through the abdominal and uterine walls, and making a two and a half inch incision into the thigh of the fetus. The child immediately escaped alive, followed by a portion of the intestines, which latter were returned, the cord tied and cut, and the wound sewed up without removing the placenta, by a plantation midwife. A surgeon was then

¹ London, 3d edition, 1803, p. 107.

² Op. cit., page 108.

called in, who re-opened the wound, removed the placenta, cleaned the intestines from blood and dirt (the operation having been performed on the ground), and again closed up the wound. In six days the child died, although vigorous when delivered, and in as many weeks the mother was well enough to be at work. She is reported to have made preparations for a second similar operation a year or two later, but was prevented, and forced to submit to a natural delivery.

From various reports made by Dr. Mosely, it is evident that many women must have perished in the West Indies, through the wretched ignorance and superstition of the plantation midwives; and the bad management of the crotchet in cases where the fetus presented unfavourably, or became impacted in the pelvis.

2. 1804. M. Dariste the elder, performed the operation upon Mrs.

3. 1806. Achard of St. Pierre, in the island of Martinique, on the 14th of October, 1804, and again on the 29th of October, 1806, with success in both instances. Not having access to the report which the operator made to the Société de Médecine Pratique de Montpellier,¹ we cannot state the cause of difficulty, and whether the children were preserved or not, but presume that they were, as the success is said to have been perfect.

4. 1820. Dr. John J. U. Van Buren performed the operation upon a woman with deformed pelvis, April 27, 1820, on the island of Tortula, one of the Virgin Islands, W. I. The woman recovered, although in her convalescence she was affected with tetanus. The child was alive when delivered, but subsequently died.

5. 1822. Dr. Van Buren operated on a case at the same island, on May 20, 1822, the woman being affected with vascular growths of the vulva and vagina, which were probably of syphilitic origin. The patient died of diarrhoea on the sixth day.

6. An operation was performed about fifteen years ago, in Havana, with success, by M. Godefroy², a former pupil of the elder Marjolin, of Paris.

7. 1877. Monterey, Mexico. We have written for the particulars of this case, but have not yet received them. The operation was performed upon a Mexican woman, and resulted in her recovery. This is the only instance of the operation we have heard of for Mexico, where pelvic contraction and deformity appear to be exceedingly rare, the tendency being, if anything, in the opposite direction.

We have presented in all, 79 cases of gastro-hysterotomy for North America, with the recovery of 41 women, and loss of 38. We have heard of nine more cases for the United States, with six recoveries, and three deaths, all having been operated upon by surgeons now deceased, but one.

¹ Annales de la Soc. de Méd. Prat. de Montpellier, t. 40, pp. 334 and 343.

² Bulletin de la Société de Chirurgie de Paris, 2d series, vol. 3, 1862.

We do not present these in the record, because we have no special points to offer in regard to them; but as we have already reclaimed from obscurity a number that were to all intents and purposes lost, we have a hope that some of them may be secured, especially since we have obtained the particulars of an operation performed thirty-one years ago, by the father of the physician who sends the report.

Although we have never had a surgeon decline to send us the report of a case that had terminated fatally, we can readily see why operators have in a number of instances failed to send accounts of their cases to medical journals for publication. A woman with a badly deformed pelvis falls into the hands of a country midwife, who waits in ignorance for a natural delivery, until the strength of the patient begins to fail, when she sends for an obstetrician. He, in turn, tries all sorts of expedients in the hope of avoiding the resort to the knife. Failing, he summons a surgeon, who, to prevent the woman dying undelivered, operates, but feels that in all probability she will not recover. As anticipated, she dies in a few hours or days, the surgeon feels that he was not at fault, but has gained no honour because he had not been called in early enough, and allows the case to go into obscurity. As but two timely operations have occurred in each group of nine cases, it will be seen how much depends upon the prompt action of those first called in. And when it becomes generally known, how much also depends upon an early operation, and how successful such cases have been in our own country, we shall hear of more elective action, and a larger proportion of recoveries. Ignorance of the past, and fear of fatal results based thereupon, will never advance a surgical operation, which appears to be more reluctantly undertaken, than any one in which the knife is applied. In plain terms, there is nothing in surgery, about which the surgeon is so timid, as the Cesarean operation; and nothing in obstetrics, of which the obstetrician stands so much in dread. If they were a little more afraid of the results of cephalotripsy in extremely narrow pelves, it would be better for some of the women, who might escape death or serious sequelæ by a timely use of the knife. We believe that it is fair to estimate the *general* result of American cases, as having saved 50 per cent. of the women; and that of the *timely operations*, at 70 to 75 per cent. of both women and children.

Every surgeon in our land should make himself fully acquainted with the steps of, and improvements in, the Cesarean operation, and especially with the value of operating as early in the labour as practicable, after he is called in; and every obstetrician should learn the comparative dangers between craniotomy in contracted pelves, and a timely delivery by gastro-hysterotomy, as applied to American women.

No.	Year.	Locality.	Operator.	Age.	Colour.	Cause of difficulty.	Dwarfs.	Conf. diam.	Result to woman.	Cause of death, woman, etc.
1	1822	Nassau, N. Y.	The girl herself; and wound dressed by Dr. Bassett	14	Quad-room	Not any	.....	.....	Lived	.....
2	1827	Newton, Ohio	Dr. J. L. Richmond	..	White	Vaginal occlusion and eclampsia	.....	.....	Lived	.....
3	1828	Ocoquan, Virginia	A charlatan	25	Mulatto	Occlusion of uterus	.....	.....	Died	Did well for 10 days; ate meat with cider; result peritonitis. Died about 12th day. (Uterus sutured)
4	1832	Near Northumberland, Pa.	Drs. Douglass and Van Velsah	..	White	Deformed pelvis	.....	.....	Died	Peritonitis in 5 or 6 days
5	1833	Columbiana Co., Ohio	Dr. Robert Estep	23	Brunette	Deformed pelvis	"Short," and full habit	Und'r 2 in.	Lived	.....
6	1831	Columbiana Co., Ohio	Dr. Robert Estep	24	Brunette	Arm pres. and def. pelvis	"Short," and full habit	Und'r 2 in.	Lived	.....
7	1835	Philadelphia, Pa.	Dr. Wm. Gibson	26	White	Deformed pelvis	4 ft. 6	2 in.	Lived	(Living at last report)
8	1835	Not stated	Drs. A. Brooke and T. C. Shreve	31	White	Deformed pelvis	4 ft. 1	1½	Died	Peritonitis
9	1837	Carroll Co., Tenn.	Dr. John Travis	..	White	Vaginal occlusion and rigidity of os uteri	.....	.....	Died	Up and doing well on 5th day. Died on 8th, probably of peritonitis
10	1837	Philadelphia, Pa.	Dr. Wm. Gibson	28	White, 24 time	Deformed pelvis	4 ft. 6	2 in.	Lived	(Uterus united to old cicatrix)
11	1838	New York City	Dr. R. K. Hoffman	42	White	Deformed pelvis	4 ft.	1½	Lived	.....
12	1838	North of New Orleans, La.	A drunken midwife	..	Black	Not any	.....	.....	Lived	.....
13	1840	Hamilton, Ohio	Dr. Cyrus Falconer	..	White	Deformed pelvis	3 ft. 6	1½	Died	Peritonitis, 2d day
14	1845	Cortland Co., N. Y.	Dr. Azaria B. Shipman	41	White	Pelvic tumour	.....	.....	Died	Exhaustion, in an hour
15	1845	Fredericksburg, Va.	Dr. Brodie S. Herndon	30	White	Rigidity of os uteri following peritonitis	.....	.....	Lived	.....
16	1846	Kosciusko, Miss.	Dr. Ozias Lewis	25	White	Deformed pelvis	Dwarf	.....	Died	Peritonitis; in a few days
17	1846	Thibodeaux Co., La.	Dr. J. A. Scudday	30	Black	Exostosis of sacrum	.....	1½	Lived	.....
18	1847	Mt. Vernon, Indiana	Dr. Wm. H. Byford	26	White	Exostosis of pelvis	.....	.....	Died	On 3d day; probably peritonitis
19	1848	Knox Co., Indiana	Dr. Joseph Somes	35	White	Deformed pelvis	.....	.....	Died	In 3 days; cause unknown
20	1849	St. James, Louisiana	Dr. Thomas Cottman	..	Black	Exostosis of pelvis	.....	.....	Lived	.....
21	1849	Richmond, Miss.	Dr. B. Harvey	..	Black	Ventral uterine hernia, following gastrostomy	.....	.....	Died	In 3 weeks; "irritative fever"
22	1849	Thibodeaux Co., La.	Dr. J. A. Scudday	33	Black, 2d time	Exostosis of sacrum	.....	1½	Lived	.....
23	1850	Opelousas, Louisiana	Dr. Vincent Boaz	22	Black	Deformed pelvis	.....	.....	Lived	.....
24	1850	Near Bethlehem, Pa.	Dr. Benj. Wilhelm	31	Black	Deformed pelvis	.....	.....	Lived	.....
25	1851	Perry Co., Alabama	Drs. Schowalter & Langhorne	18	Black	Narrow and small pelvis	.....	2 in.	Died	Convulsions, and exhaustion, in 12 or 15 hours
26	1851	Bayou Sara, Louisiana	Dr. Daniel B. Gorham	25	Black	Occlusion of os uteri	.....	.....	Lived	.....
27	1852	Wilcox Co., Alabama	Dr. Zach. E. Nettles	31	Black	Impacted head	.....	.....	Lived	.....
28	1852	Fayetteville, N. Carolina	Drs. Mallett and McSwain	21	White	Arm presentation	.....	3 in. trans. 3	Lived	.....

No.	Result to child.	Cause of death of child.	Condition of woman at time of operation.	Length of labour before operation.	Where the case is reported
1	Twins; 1 dead; probably both	Exposure to cold, and want of care; probably both alive when removed	In active natural labour	A few hours; one child born naturally	N. Y. Med. & Phys. Journ. 1822, vol. ii. p. 40.
2	Dead	Cut across the loins for removal	In convulsions	34 hours	West. Journ. Med. & Phys. Sci., 1830, vol. iii. p. 485.
3	Dead	Long dead; prolonged gestation	Exhausted by disease	At intervals during 12 or 15 months	Am. Journ. Med. Sci., 1836, vol. xviii. p. 257.
4	Dead	Destroyed by craniotomy	Exhausted by futile attempts at delivery, and delay in her giving consent	More than 24 hours	Am. Journ. Med. Sci., 1835, vol. xvi. p. 346.
5	Dead	Uterine pressure and decapitation	Exhausted; small rupture of uterus; body delivered; head in utero	Long and tedious labour	West. Journ. Med. & Phys. Sci., 1837, vol. iv. p. 13.
6	Dead	Uterine pressure in transverse position	Exhausted	Long and tedious labour	West. Journ. Med. & Phys. Sci., 1837, vol. iv. p. 17.
7	Lived	(Still living)	Good; pulse after operation 80	Before membranes were ruptured	Am. Journ. Med. Sci., 1835, vol. xvi. p. 343.
8	Dead	Uterine pressure; long labour	Pains vigorous; pulse 112; febrile symptoms	3½ days (midwife)	Am. Journ. Med. Sci., 1836, vol. xviii. p. 28.
9	Lived	.....	Great suffering and exhaustion	Over 2 days (midwife)	West. Med. & Surg. Journ., 1842, p. 352.
10	Lived	(Still living, 1878)	Pulse 112 before; 96 afterward; soon fell to 88	10 hours; membranes entire	Am. Journ. Med. Sci., 1838, vol. xxii. p. 13.
11	Alive	Deformed, and soon died	Pulse good before, under, and after operation	24 hours	N. Y. Journ. Med. & Surg., 1839, vol. i. p. 214.
12	Lived	.....	In natural labour	Less than 24 hours	N. O. Med. & Surg. Journ., vol. xi. p. 13.
13	Lived	.....	Strength failing; favourable period believed to have passed	Less than 24 hours; but still much too long for the strength of so small a woman	West. Med. & Surg. Journ., 1843, p. 340.
14	Dead	Uterine pressure; long labour	Great exhaustion; pulse 120	Several days	Am. Journ. Med. Sci., 1840, vol. xviii. N. S., p. 122.
15	Dead	Putrid; prolonged labour	In last extremity; favoured by utero-abdominal adhesions	Irregularly for several weeks	Am. Journ. Med. Sci., 1840, vol. xiii. N. S., p. 386.
16	Lived	.....	Exhausted	30 hours	Communicated by Dr. J. M. Lewis.
17	Alive	Born feeble; soon died	In good condition	12 hours	N. O. Med. & Surg. Journ., 1842, vol. vi. p. 355.
18	Dead	Uterine pressure; long labour	Pulse 110; face flushed; nodes on tibia	3 days (2 midwives)	Western Lancet, 1848, vol. vii. p. 268.
19	Alive	Died in 3 days; cause unknown	Exhausted by labour	36 hours	Communicated by the operator.
20	Dead	Craniotomy; foetus 12 lbs.	Exhausted by labour	Over 24 hours	N. O. Med. & Surg. Journ., 1851, vol. vii. p. 337.
21	Alive	Died in 8 or 10 days; believed from neglect	Fair; pains strong and regular	Several hours	N. O. Med. & Surg. Journ., 1853, vol. ix. p. 772.
22	Lived	.....	In good condition	A few hours	N. O. Med. & Surg. Journ., 1850, vol. vi. p. 355.
23	Dead	From effects of long labour	Cold; exhausted; bordering on articulo mortis	Over 2 days	Communicated by the operator.
24	Dead	From effects of long labour	Pains frightfully severe	2 days	New Jersey Med. Reporter, 1855, Oct., p. 485.
25	Dead	From effects of long labour	In convulsions	72 hours (midwife)	Communicated by Dr. Langhorne.
26	Lived	.....	Feeble, sweating, and exhausted	48 hours (too much delay on part of operator)	N. O. Med. & Surg. Journ., 1852, vol. viii. p. 194.
27	Lived	(Died of fever at 4 months)	In fair condition	15 hours	Communicated by the operator.
28	Dead	From uterine pressure in transverse position	Fatigued and worn out	Late operation. Reporter questions its being justifiable	Communicated by Dr. H. A. Bizzell.

No.	Year.	Locality.	Operator.	Age.	Colour.	Cause of difficulty.	Dwarfs.	Conj. diam.	Result to woman.	Cause of death woman, etc.
29	1852	Oktibbeha, Miss.	Dr. W. H. Merinar	24	Black	Deformed pelvis			Lived	
30	1853	Centerville, Fild Co., Alabama	Dr. J. W. Crawford	17	Black	Deformed pelvis	3 ft. 6	1½	Died	Exhaustion; 4 hours
31	1854	Oktibbeha, Miss.	Dr. W. H. Merinar	26	Black, 24 time	Deformed pelvis			Lived	
32	1855	Lastville, Vol. Co., Georgia	Dr. Wm. G. Smith	25	Black	Vaginal occlusion			Died	Exhaustion; 6 days
33	1855	Monterey, California	Dr. James L. Ord	30	Mexican	Deformed pelvis			Died	
34	1855	Corlaag, New York	Dr. Joshua B. Graves	26	White	Deformed pelvis	Dwarf	1 in.	Died	In 6 days; perforation of vagina and rectum in 3 places in an attempt at craniotomy
35	1855	Oktibbeha, Miss.	Dr. W. H. Merinar	27	Black, 3d time	Deformed pelvis			Died	Peritonitis; 4½ days
36	1856	Richmond, Virginia	Dr. Chas. S. Mills	3	Black	Deformed pelvis	3 ft. 9		Lived	
37	1856	Richmond, Virginia	Dr. Edward C. Drew	19	Black	Deformed pelvis	Dwarf	1½	Died	In 4 days; convulsions 2 hours after a meal of heavy pastry
38	1856	Wilcox Co., Alabama	Drs. Matheson and Gaillard	19	Black	Deformed pelvis			Died	Exhaustion; 36 hours
39	1857	New Orleans, Louisiana	Dr. Langenbecker	..	Black				Died	
40	1857	Council Bluffs, Iowa	Dr. Wm. F. McLelland	20	White	Deformed pelvis		1½	Lived	
41	1857	San Francisco, California	Dr. Elias S. Cooper	35	White	Occipito-posterior position, and impaction of head			Lived	Operation not required
42	1858	Lawrenceville, Ga.	Dr. A. J. Shaffer	28	White	Infantile pelvis, with straight sacrum, and cecum	3 ft. 2 70 lbs.	1¼ trans. 2½	Died	Peritonitis in 63½ hours
43	1860	Florence, Ala.	Dr. James W. Stewart	27	White	Impaction of fetus in transverse position			Lived	
44	1860	New York City	Dr. Fordyce Barker	38	White	Exostosis of sacrum		2 in.	Died	Peritonitis in 97 hours
45	1861	Hamburg, Arkansas	Dr. Isaac J. Newton	35	Black	Deformed pelvis			Lived	
46	1861	Williamsboro', North Carolina	Drs. J. R. Hicks & Wm. F. Henderson	40	Black	Impaction of fetus			Lived	
47	1862	Matamoras, Indiana	Drs. Cole and Sawyer.	..	White	Impaction of fetus in transverse position			Lived	
48	1862	St. Louis, Missouri	Dr. Chas. A. Pope	32	White	Arm presentation			Died	Exhaustion in 12 hours
49	1863	Hamburg, Arkansas	Dr. Robt. M. Dickinson	37	Black	Deformed pelvis			Died	Peritonitis; ovaries removed
50	1863	Jefferson City, Indiana	Dr. J. W. Conway	..	Black	Fibrous pelvic tumour		1¼ trans. 1½	Lived	
51	1865	Port Washington, Wis.	Dr. John T. Scholl	38	White	Large uterine tumour below head of fetus			Died	
52	1866	Burton Corn, Monroe Co., Alabama	Dr. Richard Fowler	35	Black	Shoulder presentation; left dorso-pubic			Lived	(Irrigator used)

No.	Result to child.	Cause of death of child.	Condition of woman at time of operation.	Length of labour before operation.	Where the case is reported.
29	Dead	From effects of long labour	Pulse 124; exhausted and feverish	3 days (midwife)	Phila. Medical Examiner, 1854, vol. x, p. 587.
30	Dead	From effects of long labour	Exhausted by delay	50 hours (24 of them spent in useless delay)	Trans. Med. Assoc. State Ala., 1854, p. 75.
31	Lived	.....	Pains frequent and violent	Before membranes were ruptured	Phila. Med. Examiner, 1854, vol. x, p. 587.
32	Lived	.....	Exhausted by fruitless waiting for nature	On second day of labour	Virginia Med. Journ., 1854, vol. vii, p. 293.
33	Dead	Premature, and deformed	Exhausted	.....	Communicated by Dr. M. Logan.
34	Lived	(Living in 1869)	Exhausted	4 days. (Sacral protractor mistaken for fetal head, and perforator used upon it by a young accoucheur)	Phila. Med. & Surg. Rep., 1854, Dec., p. 375.
35	Lived	.....	Pains frequent and violent; pulse 80 a few hours afterwards	A few hours	Charleston Med. Journ. Rev., 1854, p. 172.
36	Lived	.....	In fair condition	4½ hours	Monthly Stethoscope, Richmond, Va., 1856, p. 44.
37	Lived	(Drowned in Delaware when 19)	.....	.....	Communicated by the operator (1877).
38	Dead	From effects of long labour	Much exhausted	2 or 3 days	Communicated by Dr. C. Matheson.
39	Lived	.....	.....	.....	N. O. Med. News and Hospital, 1857, p. 555.
40	Lived	.....	Fair condition	Early operation	West. Med. & Surg. Journ., vol. v, p. 184.
41	Dead	Uterine pressure; weight 11½ pounds	Exhausted by long delay	61 hours. (No attempt to use forceps, or deliver by craniotomy, although head was in sight during a pain, for 2½ hours)	Pacific Med. & Surg. Journ., March, 1858, p. 89.
42	Dead	Craniotomy; weighed 9 pounds	Exhausted by long labour and 3 hours craniotomy	12 hours. (Much time lost in fruitless efforts)	Atlanta Med. & Surg. Journ., Oct. 1859, p. 65.
43	Dead	Impaction in pelvis	Exhausted by long labour—delicate health	30 hours under midwife; operation several hours later	Nashville Med. & Surg. Journ., 1860, p. 501.
44	Lived	(9½ pounds in weight; was living in 1871, and in fine health)	Pulse 120 before, and 134 to 140 after the operation; no des. on shins	2 days	Am. Med. Times, N. Y., vol. i, p. 351; vol. ii, p. 55.
45	Lived	.....	In good condition	6 or 8 hours. (No delay)	N. O. Med. & Surg. Journ., vol. xviii, p. 505. Particulars by letter from the operator.
46	Dead	Impaction in pelvis	Fatigue and exhaustion	On 4th day of labour	Communicated by Dr. R. J. Hicks (1877).
47	Dead	Impaction in pelvis	Fatigue and exhaustion	Late. (Under midwife)	Communicated by Dr. C. Arthur.
48	Dead	Impaction in pelvis from rupturing membranes early, and giving ergot	Much exhausted	25 hours (under midwife)	Communicated by Dr. W. S. Barker.
49	Lived	.....	.....	.....	.....
50	Dead	(Not stated; probably)	Strumous habit, and afflicted with intermittent fever	14 hours	Cincinnati Lancet & Ob., 1863, vol. vi, p. 401.
51	Lived	(Alive Nov. 1877)	.....	.....	Communicated by the operator (1877).
52	Dead	Uterine pressure; membranes ruptured almost with first pain	Exhausted; waters long evacuated, anæmic from loss of blood	60 hours. (Podalic and cephalic version failed; arm removed, evisceration of body and chest attempted)	Southern Journ. Med. Sci., New Orleans, 1857, vol. i, p. 633.

No.	Year.	Locality.	Operator.	Age.	Colour.	Cause of difficulty.	Dwarfs.	Conj. diam.	Result to woman.	Cause of death, woman, etc.
53	1866	West Chester Co., N. Y.	Dr. G. J. Fisher	30	Black	Arm presentation; impaction; pelvic brim contracted	.....	.....	Died	Exhaustion in 3½ days, following fright and excitement. No bad symptoms, for 3 days
54	1867	Pittsfield, Mass.	Dr. Wm. Warren Greene.	28	Black	Deformed pelvis	.....	Under 2 in.	Lived	.....
55	1867	Richmond, Virginia	Dr. Chas. S. Mills	34	Black	Deformed pelvis	3 ft. 9	.....	Died	Pre-existing enteric peritonitis, in 5 days
56	1867	New Haven, Connecticut	Dr. T. Beers Townsend	16	Black	Deformed pelvis	.....	1½	Lived	(3 <i>fine hemp uterine sutures</i>) 5 uterine vessels tied
57	1867	New Orleans, Louisiana	Drs. D'Aquin and Brickell	23	French creole	Occlusion of vagina and os uteri	.....	.....	Lived	(6 <i>silver-wire sutures</i> in uterine Well, Nov. 1877
58	1868	Mobile, Alabama	Dr. J. T. Gilmore	19	Black	Deformed pelvis	.....	1½	Died	Peritonitis, in 60 hours
59	1868	Aberdeen, Mississippi	Dr. E. Paul Sale	22	Black	Extra and intra uterine pregnancy	.....	.....	Died	Septicæmia, 5 days
60	1869	Philadelphia, Pa.	Dr. Walter F. Atlee	31	White	Deformed pelvis	.....	2 in.	Died	Obstruction of bowels; probably inclosed in uterine wound
61	1869	Edgefield, S. Carolina	Dr. J. Walter Hill	32	Black	Almost complete occlusion of vagina; examined per rectum	.....	.....	Lived	(Carbolic acid and glycerine) dressing to wound; complete union by eleventh day
62	1869	Ann Arbor, Michigan	Dr. Abram Sager	35	White	Small and deformed pelvis	3 ft. 6½	¾	Died	Secondary shock in 20 hours (4 <i>silver uterine sutures</i>)
63	1870	Baltimore, Maryland	Dr. James W. Butler.	26	Black	Deformed pelvis	.....	2 in.	Died	Peritonitis in 3 days
64	1870	Kingsbridge, New York	Drs. Palmel de Marmion and C. F. Rodenstein	40	White	Deformed pelvis	.....	2½ trans. 2½	Died	Metro-peritonitis in 42 hours (1 <i>uterine suture used</i>)
65	1870	Portland, Maine	Dr. T. A. Foster	40	White	Eclampsia, with constriction of uterus	.....	.....	Died	Bright's disease in 60 hours; forceps and turning could not be used (10 <i>silk uterine sutures</i>)
66	1871	Albany, New York	Dr. J. V. L. Quackenbush	39	White	Deformed pelvis	Dwarf	.....	Died	Peritonitis in 72 hours (2 <i>silver uterine sutures</i>)
67	1872	Fond du Lac, Wisconsin	Dr. E. L. Griffin	37	White	Sub-peritoneal uterine fibroid	.....	.....	Died	Hæmorrhage and exhaustion shortly after operation (1 <i>silk uterine suture used</i>)
68	1875	Portsmouth, Ohio	Drs. Jones and Kline	35	White	Exostosis of sacrum	3 ft. 11½ 115 lbs.	¾	Lived	(1 <i>silk uterine suture</i>)
69	1876	Saginaw City, Michigan	Dr. O. P. Barber	17	White	Deformed pelvis	3 ft. 4 65 lbs.	2 in.	Died	Peritonitis and degeneration of uterine tissue in 5 days (3 <i>silver uterine sutures</i>)
70	1876	Scottsburg, Indiana	Dr. Wm. N. McCoy	40	White	Rigidity of os uteri, and contraction of vagina, from inflammation and adhesions	.....	.....	Died	Died in 33 hours, from vomiting on her back, and inhaling the matters thrown up. Weighed over 200 lbs. 5 feet 2 inches in height.
71	1877	Detroit, Michigan	Dr. Edward W. Jenks	24	White	Arm present'n & def. pelvis	.....	.....	Lived	(4 <i>silver uterine sutures used</i>)
Summary					White 37, Black 34	Deformed pelvis, 37	Dwarfs, 16	.....	Lived 34; Died 37	Peritonitis, 17 Exhaustion, 6 Convulsions, 3 Hæmorrhage, 1 Septicæmia, 1 Obstructed bowels, 1

Result to child.	Cause of death of child.	Condition of woman at time of operation.	Length of labour before operation.	Where the case is reported
3 Dead	Uterine pressure	Much prostrated	After exhaustion	<i>Communicated by the operator.</i>
4 Lived	.....	.....	26 hours	Bost. Med. & Surg. Journ., 1868, vol. i., N. S., p. 1.
5 Dead	Premature and deformed	Affected with dysentery; 5 months pregnant	Neatly 2 days	<i>Communicated by the operator.</i>
6 Lived	.....	Pains infrequent, and not violent; pulse 130 to 160 for first 5 days after operation	62½ hours	New York Medical Record, 1868, p. 1.
7 Dead	Craniotomy	Countenance anxious; respiration 26; pulse 143; no uterine action	10 days. (5 under mid-wife)	New Orleans Med. & Surg. Journ., 1868, vol. xxi, p. 454.
8 Dead	Uterine pressure	.....	Over 2 days	<i>Communicated by the operator (1871).</i>
9 2, lived	.....	Respiration 37; pulse 135, small and weak; temperature 101°; exhausted	Extra-uterine pains for more than two weeks	N. O. Med. & Surg. Journ., 1870, vol. xxiii, p. 727.
10 Lived	(Was alive and well a year ago)	Favourable	A few hours; membranes entire	Am. Journ. Med. Sci., April, 1870, p. 393.
1 Lived	.....	Exhausted; woman had a recto-vaginal fistula	56 hours	<i>Communicated by the operator (1871).</i>
2 Lived	(Died when 6 weeks old)	Weak, and had always walked with crutches	8 or 9 hours; membranes entire	<i>Communicated by the operator (March, 1871).</i> Mich. Univ. Med. Journ., Sept. 1871, p. 380.
3 Dead	Craniotomy; partly decomposed	Almost hopeless	Long labor (midwife)	Journ. Gynecol. Soc., Boston, vol. iii., July, 1870, p. 44.
4 Lived	.....	Much exhausted	44 hours. (23 hours delay in procuring assistance)	Med. Gaz. & Weekly Rev., N. Y., 1870, p. 136.
5 Alive	(Died in a few days, presumed from uræmic poisoning)	In convulsions	Irregularly for 2 weeks	Trans. Maine Med. Assoc., 1868-69, p. 273.
6 Dead	Craniotomy	Much exhausted	3 days (midwife)	<i>Communicated by the operator (Dec. 1871).</i>
7 Dead	Probably pressure; was putrid	Much exhausted	Never had distinct labour pains; had gone a month over her time	<i>Communicated by the operator (1872).</i>
8 Lived	.....	Exhausted	38 hours	The Clinic, Cincinnati, Aug. 1873, vol. ix, p. 64.
9 Lived	(Alive, July, 1876—6 months—weighed 6 pounds, and measured 29 inches at birth)	.....	Early operation	Detroit Rev. Med. & Phar., Sept. 1876, p. 611.
10 Lived	.....	In convulsions	2½ days	American Practitioner, Oct. 1876, p. 220.
11 Dead	(Appeared not to have been long dead)	Worn out from length of labour	7 days in charge of women, then a mid-wife for a short time	Am. Journ. Obstetrics, Oct. 1877, p. 606.
Alive 37 Lived 32 Dead 36	.....	.....	<i>Timely operations</i> 16 Women saved . 12 Children saved . 13	Cases obtained by correspondence, 20.

POSTSCRIPT.—Case No. 72. After our tabular statement had been put into type, we found recorded in the *Archives de Tocologie* of Paris for Jan. 1877, an operation which was performed in May, 1875, in Toledo, Ohio, by Dr. Lungren, and reported to the said journal through Dr. H. Cazin, of Boulogne-sur-mer. The case is a remarkable one, in illustration of the opinion we have advanced in regard to the value of an early operation, and the importance of using silver wire sutures to check excessive hemorrhage from the uterine wound.

The woman was 29 years of age, white, the wife of a tailor, and had been the subject of rickets in infancy, by which her pelvis was much deformed, the conjugate diameter of the superior strait being computed at $2\frac{1}{4}$ to $2\frac{1}{2}$ inches, and the contraction of the inferior, forming an additional obstacle to the use of instruments. As this condition was fully determined some time before the operation, the knife was resorted to as early in the labour as was considered advisable, pains having existed at intervals for seven hours. The patient was placed under the influence of chloroform, and incision made in the median line: the hemorrhage from the uterine wound, being excessive, was arrested by four silver wire sutures, which were twisted twice, cut off near the second turn, and bent down at a right angle over the incision. The abdominal cavity, being carefully cleansed of blood, was closed, and the wound dressed according to Lister's method.

The patient made a rapid recovery, and with no bad symptoms at any time, her highest pulse being 100, and temperature $100\frac{1}{2}$. She and her child were alive and well a year afterward.

This case increases the number in which uterine sutures have been used to 12, and recoveries to 5, with the general result of 35 saved, to 37 lost. In three of the five recoveries, silver sutures were used, the women are living, and have suffered no inconvenience from their presence.¹

713 LOCUST ST., PHILADELPHIA, January 21, 1878.

ARTICLE II.

SOME CLINICAL OBSERVATIONS UPON REFLEX COUGH. By A. A. SMITH, M.D., Lecturer-Adjunct upon Clinical Medicine at the Bellevue Hospital Medical College, New York.

THE proper title of this paper would have been "Clinical Observations upon Reflex Cough, the primary seat of irritation being outside of the respiratory tract." I have not included the discussion of the question as to whether cough, dependent on irritation in the respiratory organs, is reflex, even though that irritation be at some point remote from the vocal cords.

¹ Readers of this journal will greatly oblige the author, by sending to him any unreported cases that may be known to them, or filling up any gaps that may exist in the tabular record of operations.

I am fully aware that "reflex influence" is often made a cloak to cover much ignorance as to the etiology and pathology of certain manifestations. Neuralgias and paralysis are often referred to "reflex influence" when it is not always an easy matter to discover the original seat of irritation. I admit that it is a very difficult problem in the physiology of the nervous system to distinguish between the phenomena of purely reflex action and those of consciousness and intelligence; still more difficult is it in the pathology. Careful clinical observation will aid us very much in solving many of these problems. During the past few years there have come under my observation a number of cases in which the cough seemed to be due to reflex influence, and in almost all, if not all, the primary seat of irritation was easily recognized. They have all occurred in private practice, and some of them have been seen by me in connection with Dr. Fordyce Barker.

CASE I.—Baby M., a male child, four weeks old, began to cough violently one night suddenly, and to cry each time he coughed. At first the cough seemed to be paroxysmal. Up to this time he appeared to be perfectly healthy. When called to see him I failed to discover an adequate cause to account for the cough, and, as there was some tendency to constipation, I ordered to be given him the traditional teaspoonful of castor oil. The following day I found, although the oil had acted quite freely, the cough was not relieved. On the contrary, it seemed to be worse. A most careful examination of the lungs, heart, and throat still failed to find the cause. There was no febrile movement. The second, third, and fourth days passing and still the violent and persistent coughing continuing, I asked that he be stripped of every article of clothing. I was led to do this because with each paroxysm of coughing he seemed to have pain of a different character from that which we get evidence of if the pain is in the thorax. As he was lying on the bed, after being stripped, I observed that each time he coughed there was an umbilical protrusion. I put a small compress over it, and held it with my hand. As long as this was done there was no coughing; but as soon as it was removed, the original programme was repeated. I then placed a compress on, and held it in place with adhesive plaster, as is done in umbilical hernia. The cough and its accompaniments ceased as by magic. At the end of a week, thinking to test the matter of cause and effect, I removed the compress, and the paroxysms of cough returned. I left it off during the day, and the paroxysms continued. That night I replaced the compress, and the paroxysms ceased. I was now quite convinced that the cough and the pain were due to the umbilical protrusion; but, as if to make the history complete, a few nights later the child, after being quite restless, awakened, and soon had the paroxysms of coughing and crying again. The nurse removed the clothing, and found the compress had become loosened and had dropped off. She replaced it, and there was no more cough.

CASE II.—A. McM., aged two and a half years, came under my care during the temporary absence of the physician of the family. She had always been healthy, but for two days before I saw her she had lost appetite, had some nausea and vomiting, and was very restless at night; had some cough, and complained of slight abdominal pains. Examination of

lungs and heart failed to reveal any disease. On the posterior wall of the pharynx there was a collection of mucus, and the tonsils were enlarged. Thinking the cough was caused by the condition of the throat, I ordered an astringent application to be used, directly applied night and morning, and prescribed a simple laxative powder to be given at night. The next day she was somewhat better, but on the fourth day I was called again to find the child with a cough almost constant, a temperature of 103° F., pulse 120, and very restless and uneasy. There was no crying at the time of coughing. A careful examination again failed to reveal a cause. I was puzzled. The child remained in much the same condition the three following days despite all my treatment, when the riddle seemed to solve itself: for on this third day, the seventh since I had first seen her, she passed a large peach-stone, and her cough, elevation of temperature, and restlessness, all ceased within a few hours, and there was no return of them. This child, during the few hours before she passed the stone, showed some tendency to a convulsion, which probably would have developed had the stone remained much longer as a source of irritation.

CASE III.—W., a female child, aged four, after suffering for two days from what seemed to be an attack of indigestion, began to cough, not violently at first, but the violence increasing, she was brought to me for advice. She was somewhat anæmic, digestion poor, tongue coated, restless at night, and indisposed to play as formerly. There was complaint of slight abdominal pains occasionally. There was no elevation of temperature at the time of consultation. Thinking I discovered evidence of periodicity in the attacks of coughing, I ordered a quinia and anodyne cough mixture, with directions to return in one week. At the end of that time there was slight improvement. Ordered treatment continued. At the end of the second week, however, she was worse again. Another examination of her suggested to me possibly the presence of worms in the intestines. I gave her *santonin* gr. ij, night and morning for four days, and on the evening of the fourth day five grains of calomel, with the result of bringing away the next day an enormous quantity of the "*ascaris vermicularis*," and with this escape the cessation of the cough—and, indeed, of all the unpleasant symptoms. The child rapidly improved, and became well and strong.

CASE IV.—M., female child aged six, had never had any pronounced illness but was never considered a robust child, was always pale and thin and of a nervous temperament. As a baby she was subject to attacks of indigestion. From the third to the fifth year she was comparatively free from these attacks. In her fifth year, during the summer, she had some peculiar attacks, characterized by pain in the abdomen, distension and diarrhoea and violent cough and sometimes vomiting. These attacks would last four or five days and then pass off, and she would be quite well again. The first attacks occurred in June. She came under my care the following November. For the three months preceding, there had been almost constant cough with progressive loss of flesh, strength, and appetite, night sweats, pains in the chest, and dyspnoea, *no expectoration*, the attacks of diarrhoea occurring at intervals of two or three weeks. An examination of the heart, lungs, and throat failed to reveal a cause for all this disturbance. Treatment availed but little. Two weeks after she came under observation she passed several sections of tapeworm. Appropriate treatment removed the remainder of it, which was followed by complete cessation of all her disturbances.

CASE V.—Mrs. M., aged 25, consulted me in September, 1875, for the relief of a cough which she had had for a month. She had been out of the city for the summer, and had just returned the day before. The cough seemed to be increasing, and alarmed her. She had noticed that it was dry, and that it was worse every other day. Having prescribed for her during the previous year for malarial symptoms, and failing on examination to find any disease of the lungs, heart, or throat, I again gave quinia, thinking the cough was malarial in its origin. I saw her several times between this and the middle of October, but much to my discomfort, and still more to hers, I did not seem to make much progress in relieving her cough. About the middle of October there were added other symptoms, loss of appetite, flesh, and strength, disturbances of digestion, headache, anæmia, some dyspnoea on exertion, and some thoracic pain, particularly on the left side. By Nov. 1 all these symptoms seemed progressing except the cough, which remained about the same as when I first saw her; there was *no expectoration*. She had lost in weight since the middle of August about sixteen pounds. I interrogated every organ in the body, and failed to make a diagnosis satisfactory to myself. I could not but believe that some serious organic disease was advancing, and that I was unable to discover its seat. On the morning of Nov. 2 she brought to me in a bottle some sections of tapeworm, which she had passed that morning. I at once put her on appropriate treatment. She got rid of her tapeworm, and was then put on tonics, and by New-year's day she had nearly regained her former health and vigour. I confess, as I did to her at the time, that tapeworm, as a cause of her trouble, had not occurred to me until I saw the sections she brought me; and even then I did not feel convinced until I saw the rapid and marked improvement in her condition after its removal.

CASE VI.—Mrs. M., aged 23, began to cough violently in April. When I was called to see her she said, "Doctor, I believe I am *enceinte* again, because I have now just such a cough as I had when I was in that condition before." This was her second pregnancy, and her belief proved to be correct, for she was confined the following January. The cough continued during the first two and a half months of pregnancy and then ceased, just as it had done in the previous one, and an examination of the heart, lungs, and throat gave negative evidences. There was at no time any morning sickness, the cough probably taking the place of it. There was no expectoration. Thinking it was reflex, I prescribed bromide of sodium, five grains, four or five times a day, with the effect to relieve it very much.

CASE VII.—C., female child, aged three and a half, had gone to bed feeling quite well. At one o'clock her mother was called by the nurse to see her, saying she had "croup." She found her coughing almost constantly, with great dyspnoea, the cough "croupy." Having had an attack of the kind before, and having been relieved by an emetic, the mother at once administered a teaspoonful of syrup ipecac. In a few minutes she threw up an enormous quantity of food, and among other things some meat she had eaten thirteen hours before, not a particle digested. At two and a half she was entirely relieved of the cough and dyspnoea. She slept quietly the remainder of the night, and the next morning there was but little trace of the previous night's disturbance. She had several very similar attacks afterwards, always due to indigestion, and always relieved by an emetic. Such cases as this are quite common.

The following case is unique :—

CASE VIII.—Mr. S., aged forty-five, a large man of rather a nervous temperament and a good liver, subject to attacks of asthma the past twenty years. He has been under my professional observation the past four years. While visiting him socially a short time since, he said: "I want to call your attention to a peculiar feature of my case." He stripped to the waist, and showed me a small growth on the back. It was the size of a split pea, situated about two inches to the right of the spinous process of the second dorsal vertebra. It was not painful even when pinched, as a neuroma is. On scratching this he at once began to cough and to suffer from dyspnoea, and to be very nervous and uneasy. His wife had discovered this feature years before while rubbing his back during one of his attacks of asthma. As she rubbed rather forcibly over this growth, the phenomena as above described occurred. This case would seem to add a new argument for considering asthma an essentially nervous disease. I examined his chest before and during the scratching, but did not find that during the scratching there was any change in the physical signs.

CASE IX.—Miss S., aged 19, suffering from a retroverted uterus and spinal anemia with all its accompaniments, was treated with electricity along with other remedies. Usually galvanism was used. One pole of the battery was placed on the cervical spine, and, as the other was passed on either side of the spinous processes of the last dorsal and first two lumbar vertebrae, she began to cough, mildly at first, but violently if the application was continued. The current was not of sufficient strength to give pain at these points. The faradaic current produced the same phenomena, but not in so marked a degree. If the second pole was placed along any of the other spinous processes, no such effects were produced. The attacks of coughing would cease immediately the electricity was stopped. The patient was of a very nervous temperament, and quite hysterical.

CASE X.—Mrs. W., aged 36, married, the mother of one child, had suffered for over a year from a cough, which had always been considered nervous in its origin. An examination of the heart and lungs gave no evidence of disease. On the posterior wall of the pharynx there was follicular inflammation, with considerable mucus. Thinking this might account for the cough, and especially as she was quite anæmic and suffered from an impaired digestion, I ordered a tonic, and gave her also an astringent application to be applied to the pharynx twice daily. In the course of two weeks she was much relieved, but still the cough continued sufficient to annoy her. I saw her several times in the following two months, and, although her general condition improved, she did not get entirely relieved of the cough. One day about three months after I first saw her, I was hastily summoned to her, and found her lying on a lounge suffering from a severe pain in the back, unable to move without increasing it very much, and with a cough which was almost continuously paroxysmal. I learned that, in attempting to reach a book on a high shelf, she felt as though something gave way in her back, and immediately the severe pain and the peculiar cough occurred. I at once made an examination, found a retroverted uterus, replaced it with very little difficulty, with the result of not only relieving the pain, but also, to a great extent, the paroxysmal cough. I then obtained the history that the "nervous cough" was aggravated at the times of menstruation, particularly at the beginning of it, and when the flow became fully established the cough

almost ceased. An Albert Smith pessary was introduced in the course of a few days, with the effect of relieving the unpleasant symptoms accompanying the retroversion, and of entirely curing the cough. Subsequently, thinking she might do without the pessary, it was removed; but the retroversion recurred, and with it the cough. Again the pessary relieved the retroversion and the cough. I regard this case as one of partial retroversion when I first saw her, and of complete, or nearly so, when she made the extra muscular effort to reach the book.

In *Le Lyon Médical* for November, 1876, there is reported an interesting case bearing on this subject.

A married woman, 23 years of age, had been treated for a long time for a nervous cough without success. She had been pregnant at the age of 21, but had aborted at the third month. After that time she suffered from leucorrhœa and lumbar pains, which were augmented by standing or walking. The cough occurred only during the day, and consisted of frequent short paroxysms, with intervals of repose varying from half an hour to two hours. The cough ceased immediately on lying down. An examination revealed an anteverted and considerably enlarged uterus. In the dorsal decubitus the organ resumed very nearly its normal position. The uterus was replaced, and kept in place by a pessary, and the cough ceased at once. A few days later the pessary was removed, the displacement returned, and with it the paroxysms of coughing, and these paroxysms continued until the pessary was reapplied. It is stated that at the end of a year the patient was so much improved that even the removal of the pessary produced no return of the cough.

CASE XI.—A female child, aged seventeen months, after two days of uneasiness, loss of appetite, irritability, and restlessness at night, began to cough, and at the same time to have some febrile movement. I saw the child on the morning of the third day. She had then been coughing twenty-four hours, and had awakened the previous night several times, crying out as though in pain, and coughing quite violently. I failed on examination to find anything in the throat or thoracic cavity to account for the cough. An examination of the mouth revealed the gums much swollen, and very tender over the upper canines. I lanced them freely, and gave no other treatment. The relief seemed to be immediate. There was but little coughing that day; she had a good night, and the following day she seemed entirely well. About three weeks subsequently I was called to see her again, and obtained about the same history as before. An examination revealed the gums swollen and tender over the *lower* canines. The lancet again gave relief to all the symptoms. Any treatment which would have allayed the irritation of the gums would probably have relieved the cough. This is one of a class of cases in which the bromides, from their well-known power of allaying reflex irritation, give such relief. Oftentimes the bromides will allay the cough in both children and adults, but especially the former, because of their more easily impressed nervous systems, and for this reason more liable to reflex cough, when the seat of irritation producing the cough is unrecognized.

Cases similar to some of those included in this paper are probably familiar to most physicians. The cough of teething is recognized often even by the laity. The cough due to disturbances in the alimentary canal, to ovarian and uterine irritation, has frequently been referred to; but in the cases I have here reported, the relation of cause and effect was so apparent that I have included some that would seem almost commonplace.

In Cases IV. and V. there was the clinical history apparently of progressive pulmonary disease: cough, loss of flesh, strength, and appetite, and, as the anemia advanced, there were in both cases dyspnoea, night sweats, and thoracic pains. These pains were probably due to intercostal neuralgia. In both cases there was at times febrile movement. All these symptoms disappeared when the cause (the tapeworm) was removed.

The cause of irritation is not always so easily discovered. It is quite common to hear of a "nervous cough," a hysterical cough. Is it not probable that in many such cases there exists a cause, remote perhaps from the larynx, which can with care be discovered and removed, and thus the cough, as well as many other of the nervous and hysterical manifestations, be relieved?

Cough is frequently an accompaniment of what is called spinal irritation.

The cough due to reflex irritation is not the same in character in all cases. Generally it is dry. In some it is paroxysmal; in others almost like the sharp, quick bark of a small dog; but I do not believe it is sufficiently characteristic to enable one to recognize it simply by its peculiarities.

ARTICLE III.

DERANGEMENT OF THE GLYCOGENIC FUNCTION OF THE LIVER AS A CAUSE OF BRIGHT'S DISEASE. By GOUVERNEUR M. SMITH, M.D., Physician to the New York and Presbyterian Hospitals.

INVESTIGATIONS relating to the etiology of Bright's disease have, within a few years, been prosecuted with special care. Such investigations have proved of great practical utility. In the first place, they have enabled physicians, to a certain extent, to guard against the prevalence of a malady which is of frequent occurrence in this latitude, and which is dreaded on account of its morbid character. In the second place, such studies have enabled medical men to treat the disorder in a more satisfactory manner, and when patients have been relieved of their more distressing symptoms, and are able to resume the ordinary duties of life, they can often be placed under circumstances tending to prevent further injury to the renal texture.

The term Bright's disease is employed in such a manner that it includes diverse pathological conditions of the kidneys. Each structure entering into the composition of the renal excretories is liable to morbid changes. Such changes may be confined primarily to one structure, other structures becoming subsequently involved, or there may be apparently a contemporaneous morbid eruption, involving all the tissues, the initial lesion escaping observation.

It is a well-recognized fact, as shown by post-mortem examinations, that very different diseased appearances of the kidneys are observed in the bodies of those succumbing from renal dropsy, and it is possible that the causes of these diverse conditions may have been as different as are the lesions which are discovered. At the same time, it must be admitted that combined causes may have been operative in producing complex lesions, and, again, diverse causes may be provocative of a like lesion.

It may seem unscientific to group together heterogeneous lesions and classify them under one disorder. In time, this group of morbid phenomena will be dissected into accurate subdivisions—each subdivision being as distinctly recognized by name as is the distinct nomenclature now employed to designate the group. No apology seems absolutely necessary, however, as yet, for the continued use of the term Bright's disease, which has become so universally employed, for while it is often inferred under what kind of a renal lesion a patient is suffering, nevertheless in most forms of lesions of the kidneys, to which special allusion has been made, while there may be distinctive signs of each lesion, there is still, owing to the interruption of the renal functions, such an analogy of symptoms as to still warrant a generic term to express them.

The design of this article is to call attention to a special point in the etiology of renal dropsy, viz., *derangement of the glycogenic function of the liver as a cause of Bright's disease*. Now, in order to illustrate this subject, it appears to me desirable to review, in a brief manner, the causes of Bright's disease ordinarily recognized, and to review some points relating to hepatic sugar formation. In doing this I must be pardoned if reference is made to my former investigations on these subjects, which reference will partially explain how a novel cause of a renal malady has more recently been suggested to my mind.

In a paper read before the New York Academy of Medicine, April 1, 1869, and published in Volume III. of the Academy's *Transactions*, I endeavoured to illustrate the etiology of Bright's disease by an analysis of three hundred and eight cases of the disorder occurring in the New York Hospital. The limits of this article will not allow of a full review of all the points brought forward therein, it must suffice to allude to a few of them as introductory to the subjoined thoughts.

In regard to the causes of acute Bright's disease, or tubal nephritis as it has been denominated, the following causes were alluded to: exposure to cold and wet, and checking perspiration, sequel of measles, of scarlet fever, and of malarial fever, immoderate alcohol drinking, obstructions to the escape of bile, an irritable state of the urine as occurring in various diseases, and the internal administration of turpentine, cantharides, arsenic, etc.

Respecting the chronic form of Bright's disease in a considerable proportion of the two hundred and sixty-eight cases before alluded to, the

causes were apparently assignable, and these may be enumerated as follows: intemperance, climatic exposures to the inclemencies of the weather, malarial poisoning, workings in lead, opium habit, gout and rheumatism, diseases of the heart, while a number of patients had suppurating sores.

Dickinson, in his admirable treatise on albuminuria, says:—

“The following are the conditions to which granular degeneration of the kidneys can be traced:—

“1st. Conditions which produce and maintain venous congestion of the kidney, such as valvular disease of the heart and pregnancy.

“2d. The gouty habit, from whatever circumstance it arise, but more especially when it is associated with lead.

“3d. A general tendency to fibroid degeneration, as shown by changes in the liver, lungs, and other organs.

“Further, it must be allowed that the disease arises in certain cases in consequence of a local tendency peculiar to the individual, or as a result of influences of which as yet we know nothing.”

Concerning the amyloid kidney, or “depurative infiltration,” as it has been denominated, it is constantly associated with cancerous, syphilitic, and tubercular diseases, and indeed with other disorders, accompanied by profuse suppuration, other viscera besides the kidneys being similarly and simultaneously affected.

At this stage, attention is particularly called to a special point. Dickinson has shown, in speaking of albuminuria, that “arctic cold and equatorial heat are equally inimical to its development. It chiefly abounds where the mean temperature of the year is not far removed from 50° F.” My study of this subject as relating to this Continent, and as shown in the paper before alluded to, seemed to corroborate this opinion.

In comparing the mortuary tables of widely scattered localities in our section of the northern hemisphere, it was found that Bright's disease was most prevalent in regions where the seasons are most marked, and where the vicissitudes from heat to cold are often abrupt and intense. If such climatic causes can induce chronic congestion, and ultimately organic lesions in the kidneys, it can be legitimately inferred that other causes, which lower the tone of the system and which induce a pretty constantly diminished temperature of the body, can produce similar results.

Here a digression must be made, in order to fully understand the conclusions arrived at in this article.

After looking into the subject of Bright's disease, my attention was directed to that of diabetes, and in a paper on that disorder, read before the New York Academy of Medicine, Feb. 2d, 1871,¹ I took occasion to present some novel views regarding the uses of hepatic glycogenesis. Subsequently to this time, viz., on June 15th, 1871, Dr. Dalton read a paper before the Academy on sugar formation in the liver, and by request I took part in the discussion, and confined my remarks to the “Uses and Derangements of the Glycogenic Function of the Liver.”²

¹ Transactions New York Academy of Medicine, vol. iii.

² Ibid., New Series, vol. i.

The physiologists up to this period had directed their investigations strictly towards deciding the question whether or not the liver possessed a glycogenic function, and had not, so far as I am aware, made known any very specific uses for the function. It seemed to be proved by the experiments of Bernard, Flint, Lusk, and Dalton, that sugar was generated by the liver, and could readily be traced from this viscus to the right side of the heart; that the blood of the general circulation contained but a small quantity of sugar, but in the right side of the heart it occurred in a double or quadruple quantity as compared with that found in the jugular vein.

From these facts it appeared to me a legitimate inference that such a constant and normal hepatic glycogenesis must have a benign purpose in the economy, and, further, that, as a function, it must be as liable to derangement as are the other functions of the animal economy. The liver might generate the sugar either too freely or too sparsely, or might entirely fail to create it; or, again, an abnormal form of sugar might be elaborated, or some material which is not sugar, and which, though perhaps allied to it, is a diseased product, and fails to supply the economy with a material susceptible of being utilized in a healthful manner. An increased amount of sugar as occurring in the disorder known as diabetes had long been recognized and made an object of investigation; but respecting these other points no researches, so far as my observation extended, had been made.

A brief epitome of some of the views relating to these topics, which I have before offered on the occasion alluded to, may here be introduced as a further introduction to the subject under special consideration.

Sugar, as generated by the liver, can be traced to the right side of the heart and to the lungs. Now what disposition is made of this saccharine material in the pulmonary organs? In the lungs, the sugar may be largely destroyed and eliminated as carbonic acid and water, an *evolution of heat* attending the metamorphosis, and a partial explanation afforded respecting the maintenance of animal heat. An analogous process of vital chemistry is observed in young and growing plants, by which sugar is made subservient to the production of a suitable degree of temperature. The process, however, is not an identical one. Part of the sugar in vegetables, under the influences of bio-chemical transformations, is converted into permanent tissue; while another part is broken into its elements to form varied organic associations, and during these combinations and recombinations an evolution of heat occurs; thus affording a necessary and normal temperature to cotyledons, radicles, and plumules of the tiny embryo, and indeed to growing plants of maturer growth. Phyto-chemical processes are with difficulty observed, but under master minds have been interpreted. If we turn either to the most infinitesimal or to the most gigantic vegetable forms, we find them possessed with the power of maintaining a temperature adapted to the necessities of each; and in them starch, sugar, and oil

play important roles as heat-producing factors. In the animal kingdom, both the insignificant and the potential forms of life are endowed with the power of maintaining a certain degree of temperature. Diverse as are the vegetable and animal creations, kindred proximate principles are operative in both, in the production of kindred results, though the processes of vital chemistry may not be alike in the two realms of nature.

Respecting the disposition of hepatic sugar in the economy, while a part of the saccharine material may be destroyed in the lungs and its elements eliminated, another part may be converted in the pulmonary organs into some other principle or principles which the physiologists have not recognized, and which, passing into the circulation, may either be chemically disposed of and eliminated, or be converted into tissues composed of carbon, hydrogen, and oxygen. As a result of these and of other chemical processes, warmth is generated—a warmth so tempered by the divine will, that a glow is maintained, genial and adapted to the different classes and species of animals.

There are good reasons for believing that hepatic glycogenesis is increased at times, both under normal and abnormal conditions. It appears to me it can account for *obesity*. In those individuals inclined to the accumulation of adipose tissue, the liver doubtless generates more sugar than ordinary, and it is disposed of in the economy by a conversion into fat. As corroborative of this, it may be stated that we not unfrequently notice a temporary glycosuria in stout persons. This variety of diabetes is not ordinarily fatal, and I account for the occurrence of the phenomenon in this manner: more sugar is occasionally formed than can be utilized in the system, and the surplus passes away in the renal secretion.

A normal augmented hepatic glycogenesis occurs, I think, during lactation; the irritation of the mammary glands, etc., at the close of gestation excites, by a nervous influence, increased sugar formation in the liver, the blood of the general circulation becomes charged with it, this sugar is separated from the blood by the mammary glands, and appears somewhat modified as lactose in the milk. In proof of this, it is known that milk is richer in sugar early in lactation than at later periods; and, again, nursing women and milch cows have been observed to have a temporary melituria.

These phenomena, relating to the quality of milk and to glycosuria in young mothers, which had been observed as clinical facts, had not, so far as I was aware, been explained, and I have, on a former occasion, accounted for them in this manner: mammary irritation early in lactation is more potent than at later seasons, and better calculated to excite reflex nervous influences; and, again, more sugar is generated than is required for the milk, and hence the appearance of the extra supply as an excretion in the urine. Patients suffering with confirmed diabetes have been observed to eliminate sugar in various secretions, as in the saliva and perspiration, as well as in pus.

It is a natural supposition, as a converse to the above, that sugar formation may be either arrested or diminished, and that symptoms indicative of such condition should be as conspicuous as are those which are indicative of an extraordinary quantity. Nature ordinarily may be so conservative as to diminish or increase the production of sugar to meet the demands of the system during the varying seasons of the year. In our latitude diabetes is a malady of rare occurrence; in certain warm regions it is a disorder so frequently met with that scarcely a family escapes its appearance. We recognize diverse causes as giving rise to the symptom of glycosuria. In tropical countries we are aware of the great prevalence of hepatic disorders, as provoked by a variety of circumstances, and it is probable that the hepatic sugar, not being all required to maintain animal temperature, is excreted in the renal secretion.

Among the patients constantly coming under our observation in this climate, cases are often observed in which the patients are lean and dyspeptic, and who suffer sensations of chilliness and have little endurance of cold. These phenomena are particularly noticeable among those suffering from functional and organic diseases of the liver; there is probably, in other words, a concomitant derangement of both the glycogenic and biliary functions. Sugar is not degenerated in quantities sufficient either to maintain animal heat or to be converted into fat. It is occasionally observed that lean persons have a normal temperature, and can withstand inclement surroundings. In such cases it is presumable that the saccharine material is utilized in the economy in the production of heat, and not in the production of adipose tissue. It sometimes happens that, when the production of sugar is excessive, as in melituria, the temperature of the patient is below the normal standard, the sugar being only partially turned to a profitable account, the great mass of it being eliminated.

The fact is well recognized that certain nervous conditions favour an abnormal increase in glycogenesis; it would seem to be likewise true that other nervous conditions occur which arrest or diminish sugar formation. As it would be beyond the limits of this paper to discuss at length these and other etiological points relating to these interesting phenomena, it must suffice to confine our attention to a single sequel of a diminished hepatic saccharine production. I shall have to omit a consideration of numerous noteworthy points relating to the question how far derangements of the glycogenic function directly or indirectly either cause or modify various acute or chronic diseases. Variations of the function modify vital processes, and induce both trivial and grave morbid *sequelæ*.

If, as we have before seen, certain climatic causes can induce in the kidneys organic disease, and if diminished sugar supply can induce a diminished animal temperature, it seems a legitimate conclusion that persons suffering under such saccharine impoverishment, and living in certain latitudes, are peculiarly liable to renal disease. The function may be so dimin-

ished that, without climatic causes, the system may be lowered in vitality, rendering the kidneys peculiarly liable to chronic congestion and organic lesion. A new factor of disease is thus found to be operative, and this factor, simultaneously operative with other morbid factors, induces diverse, complex, and widely diffused lesions. The more closely we study the relationships of organs and functions, the more readily can we understand their mutual dependencies, and the more clearly can we perceive how derangements in one or more can induce derangements in others.

The conclusions to be drawn from the foregoing pages may be epitomized as follows:—

First. Among the causes giving rise to one form of the disorder known as Bright's disease, climate is recognized as a potential one—climatic influences being chiefly operative in such sections of the earth where the vicissitudes of the weather are sharp and abrupt, especially as occurring in localities of the temperate zone.

Second. One of the uses of the glycogenic function of the liver is to maintain animal temperature. The function in question may be deranged in various ways. Sugar may not be formed at all, or may be formed in unduly large quantities, or may be generated so sparsely as to be insufficient to subserve the wants of the economy. In a case where the sugar is suppressed, or is prepared in very moderate quantities, animal temperature is diminished, and the person suffers in a manner similar to that of one exposed to harsh atmospherical conditions, and is liable to chronic congestion and organic lesion of the kidneys; and if such an individual is a resident of a region in which the mean annual temperature is about 50° F., he is peculiarly prone to injury of the renal textures.

Third. Lessons in the prophylaxis of Bright's disease and the treatment of the disorder are derived from the above considerations. As means of prevention, care must be bestowed upon the nervous system, resort must be had to dietetic measures, extreme attention being paid towards promoting the healthy performance of the various functions, while the artificial temperature of apartments and personal protection by clothing when exposed to inclement vicissitudes are important measures of defence.

Patients already suffering under chronic Bright's disease are by no means irremediable, unless their cases are very seriously complicated. A large proportion of such cases leave our hospitals relieved, and with the prospect of future usefulness, if strict attention is paid to the salutary rules of treatment which can be enjoined. It has fallen to my lot to see in hospital, consultation, and private practice no inconsiderable amount of renal disease—especially of Bright's disease. It has been to me a matter of surprise how much can be accomplished by careful treatment in the relief of such patients. When such invalids have been relieved of the more urgent symptoms which confine them either to the bed, or to the room, or

to the house, very much can be done by hygienic means to promote restoration to comparative health, even though there is an assurance that the kidneys have undergone organic changes and can never be reinstated to an absolutely normal condition.

In promoting recuperation, special care is taken to relieve the kidneys of all unnecessary work. The diet is particularly regulated, both as respects quality and quantity, so that only the essential requirements of food, suited to each case, shall be ingested. In health the kidneys are constantly overtasked in their duties by reason of the inconsiderate use as well of solid aliments as of beverages. I have come to regard a rigid dietetic regimen as being as essential to the restoration of patients suffering with granular degeneration of the kidneys, etc., as the restricted diet in the management of diabetes, although of course the modifications and restrictions are not the same in the two disorders. No less attention is paid to the functions of the skin, and daily and general lavements and frictions are insisted upon in order to promote increased cutaneous exhalation and largely relieve the kidneys of duties ordinarily devolving upon them.

The temperature of apartments is made a matter of special regulation, and clothing suited to in-door and out-door life is prescribed. While under such hygienic measures, patients are further enjoined to take small doses of corrosive sublimate, under which treatment amelioration is generally manifest. Without any change of climate, patients may thus be placed under conditions rendering life not only comfortable, but also fitted to perform the ordinary duties incident to it.

It occasionally happens, however, that harsh and wintry surroundings are incompatible with such a degree of recuperation, and in advising the removal of a patient to a genial clime, we have to consider, in the words of Milton—

“By what means to shun
The inclement seasons, rain, ice, hail, and snow,
Which now the sky, with various face, begins
To show us, . . . while the winds
Blow moist and keen, shattering the graceful locks
Of these fair spreading trees; which bid us seek
Some better shroud, some better warmth.”

Postscript.—On the completion of the above paper, and when about mailing the manuscript for publication, an interesting and able article has fallen under my notice in the *American Journal of Science and Art*, Feb. 1878, by Dr. Joseph Le Conte, denominated “Some Thoughts on the Glycogenic Function of the Liver and its Relation to Vital Force and Vital Heat.” It has been my aim to give the foregoing article a practical bearing; the length of the paper has forbidden the presentation of the various theories in regard to the precise manner by which sugar is formed as derived from the liver. Several questions relating to this subject are still *sub judice*, but physiologists agree that saccharine blood ordinarily flows

from the liver, and without discussing mooted points regarding its source. I have endeavoured to show how derangements of such a flow can unfavourably affect the animal economy.

Dr. Le Conte, without alluding to the subject considered in this paper, has alluded to a connection between the hepatic and renal functions. He says:—

“We have seen that albuminoids, whether food or waste tissues, are probably split in the liver into glycogen and some nitrogenous residuum. The glycogen is changed into sugar, and then by oxidation into CO_2 and H_2O , and eliminated by the lungs. The nitrogenous residuum, if it is not at first urea, is at least easily changed into urea and eliminated by the kidneys. We see then the *close relation* between the functions of the liver and kidneys.”

ARTICLE IV.

ON THE SO-CALLED PIGMENTARY SYPHILIDE.¹ By GEO. HENRY FOX,
M.D., of New York.

THERE is a peculiar vitiliginous condition of the skin which in a more or less marked form is occasionally met with in connection with early syphilis. It is observed more frequently in females than in males, occurs usually upon the sides of the neck, and constitutes the so-called *pigmentary syphilide*. The description of the affection found in text-books, like the description of other rare affections of the skin, is frequently based upon reading rather than upon clinical study. As a consequence, the mistake originally made, of regarding the abnormal pigmentation as a direct manifestation of syphilis, together with a few trifling misstatements, has obtained a foothold in syphilographic literature, and we now find the affection bearing a name which it does not merit and assuming an importance which it does not possess.

A glance at the literature of the subject shows that the affection was first described by Hardy, and later by Pillon, Tanturri, Bazin, Fournier, Drysdale, and others. Hebra mentions the occurrence of loss of pigment on the site of syphilitic papules and other cellular infiltrations, but makes no special reference to the affection in question. Tilbury Fox describes the macule or stains which follow syphilitic lesions, but does not speak of any circumscribed loss of pigment. Neither Zeissl nor Bumstead refers to the affection. Van Buren and Keyes give a brief description, and remark that “this eruption is sometimes, possibly always, simply a pigmentation left behind by a roseola.” Duhring dignifies the affection with the title “*Syphiloderma pigmentosum*,” and states that he has never met with a case. Before giving my views as to the nature of the affection, let me

¹ Read before the New York Dermatological Society, Jan. 8, 1878.

attempt its description. This I shall base upon a careful study of what has been written, and a close observation of cases which have occurred in my practice.

The affection consists essentially in an abnormal distribution of pigment, and is usually confined to a limited portion of skin. There occur both light and dark patches. The light patches are circular or oval in form, vary from a dime to a quarter dollar in size, and are scattered irregularly over the affected surface. In some cases they would be scarcely noticeable save by contrast with a hyperpigmented interspace or background. The dark patches constituting this background are irregular in form, and run together at their edges in such a manner as to encircle the pallid disks above mentioned. These dark patches, which usually exceed in area the inclosed islands of lighter hue, have been described as being of a gray or coffee colour, and writers frequently give the differential diagnosis between the pigmentary syphilide and freckles, chloasma and tinea versicolor. This comparison is liable to mislead the reader, since the affection is rarely as striking in appearance as either of the affections named. Sometimes it can only be noted by allowing the light to strike the skin at a certain angle. The hue of the dark patches is best described as a dirty-skin colour, and when occurring in its most frequent site, upon the neck, the physician and even the patient is apt at first to regard the affection as simply due to a lack of soap and water. The favourite location, as just mentioned, is the neck, the lateral portions of which are involved in the great majority of cases. Fournier's statistics give it there in 29 out of 30 cases. I have seen one case in which the affection was well marked upon the trunk and upper extremities, while others have recorded its occurrence upon the face and on the lower extremities.

According to Fournier, the pigmentary syphilide occurs almost exclusively in the female. In fact, he admits that he has never met with it in the male. Doubtless this results from his having made his studies of syphilis largely among females. It is certain that for a somewhat similar reason the cases which I have met with have been males.

At a recent meeting of the Medical Society of London, Dr. C. R. Drysdale read a paper on the "pigmentary syphilide in the female." He reported the occurrence of the affection (upon the neck) in 14 out of 41 cases of secondary syphilis. Here the 14 cases were necessarily females, as the 41 were of that sex. Hardy speaks of the occurrence of the pigmentary syphilide in males as being exceptional, and only to be noted in individuals of a lymphatic temperament and fair skin. Others, too, have only observed the affection in those males who possess a feminine skin, "white, delicate, and transparent." It is evident that upon the neck of beardless youth the pigmentation will naturally be more striking in appearance, and hence more frequently observed than upon the hairy neck of older men, and yet it may not be of more frequent occurrence. As regards its

predilection for those males only who possess a fair complexion, I must differ with the writers, and in this connection I would refer to a photograph of a dark-skinned Italian upon whose body I found the affection to be exceptionally well marked.¹ The fact that the pigmentation is usually observed in the female is not alone a proof that it usually occurs in that sex, as is commonly stated to be the case. It should be borne in mind that the pigmentation is seldom marked in appearance, and is unaccompanied by either elevation of the skin, pain, pruritus, or desquamation. Consisting therefore in nothing more than a very trifling disfiguration, it is evident that a woman would be far more likely to notice and call attention to the affection than would a man. And when we remember that even upon the neck of a woman the pigmentation is often seen with difficulty, we must admit that the same condition might be present upon the rough, weather-beaten neck of her husband and yet be almost invisible. I will not deny that the affection occurs more frequently in the female sex, although I imagine that, if the pigmentation were sought for in all cases of syphilis, there would not be found so great a disproportion of cases as is reputed to exist.

The period at which this pigmentation is apt to develop corresponds with what is commonly known as the secondary stage of syphilis. It may appear any time between the third and sixth month, and possibly later. It is usually persistent, and may be noted long after the ordinary cutaneous lesions of syphilis have disappeared. In the patient to whose photograph I have referred, the disease had been contracted two years before. The fact that this abnormal pigmentation of the skin develops about the time when early cutaneous lesions have disappeared has an important bearing on the question of its nature, and supports the view that it is not a direct manifestation of syphilis, like the ordinary syphilodermata, but a non-specific affection of the skin occurring on the site of and as a sequel to a syphilitic eruption.

It has been stated that the essence of the affection is an abnormal pigmentation of the skin. Light macules are seen upon a dark background. Now, the question arises, Is there a loss of pigment in the lighter patches, or are these simply patches of normal skin which appear light through contrast with the surrounding hyperpigmentation? Contradictory statements are found in the literature touching upon this point. Hardy, in his earliest accounts of the pigmentary syphilide, claimed that it was characterized solely by an augmentation of pigment; but later, he writes, "these white spots, which might be taken for portions of normal skin, appearing light by contrast with the surrounding discoloration, are true macules, caused by a diminution in the amount or colour of the pigment." In opposition to this, Fournier claims that the light patches are normal as

¹ Photographic Illustrations of Skin Diseases, No. 68.

to their hue, though appearing white by contrast, and remarks that "some have been deceived by this appearance, and have claimed the existence of a twofold pathological condition, viz., an increased pigmentation of certain portions of skin, and a decreased pigmentation of others." Now, have these observers been deceived, or is M. Fournier in error? A solution of the question is to be attained by observation rather than by argument. For my part, I am thoroughly convinced that in the majority, if not in all cases, the circular or oval patches are abnormally white. The deviation from the normal hue of the skin in the light macules may frequently be too slight to justify a positive opinion as to any actual change in the pigmentation of the part, and there is no doubt that the dark background tends to make the whiteness to a certain extent illusory. But in some cases the diminution of pigment is too manifest to admit of any doubt. For instance, in the case photographed the light macules constituted, at first glance, the only apparent lesion. They were unmistakably lighter than any other portion of the patient's body, and as the hyperpigmentation in the vicinity, instead of being the prominent feature of the affection, was so slight as to be hardly noticeable, the illusory effect of contrast was reduced to a minimum. If it be conceded, then, that in many, if not in all, cases there exists a diminution, as well as an increase, of pigment, how does the affection differ from vitiligo? "Vitiligo is an acquired disease, consisting of one or more sharply-defined, round, oval, or irregularly-shaped, variously-sized and distributed, smooth, whitish spots, whose borders show an increase in the normal amount of pigmentation." (Dunbrink.) A brief consideration of this definition will suffice, I think, to prove the identity of the so-called pigmentary syphilide. It should be remarked here that Hebra restricts the term vitiligo to achromatous spots of *idiopathic* origin, which tend to enlarge and never regain their normal hue, while the achromatous spots, resulting from pressure and other local causes, he classes as a separate form of acquired leucoderma. This distinction, however, is not made by writers generally, and appears to me to be of doubtful value. There would be as much or even more reason for restricting a term like *erysipelas* to its idiopathic form.

The question which next arises is the following: Is this vitiligo of syphilitic subjects a direct cutaneous manifestation of syphilis, like the ordinary papular and pustular eruptions, or is it a non-specific local affection, appearing as a sequel rather than as a symptom of the systemic disease? The latter is my decided conviction. That the affection is of diagnostic importance as an indication of syphilis cannot be denied, and we must admit its syphilitic origin, but it by no means follows that the affection partakes of a syphilitic nature. It is wholly uninfluenced by mercury and other antisymphilitics, and often persists long after the ordinary manifestations of syphilis have disappeared. These facts have been remarked upon as singular features by writers who regard the affection as a true

syphilide. For my part, I do not consider them as at all strange. Believing the affection to be a vitiligo, syphilitic merely in its origin, I would as soon expect mercury to produce an effect upon a syphilitic cicatrix, and as far as its immediate dependence upon syphilis is concerned, it seems to me that we have no more ground for speaking of a pigmentary syphilide than we have to speak of a cicatricial syphilide. Both discoloration and cicatrix are independent of, although the result of, syphilis. The one disappears in time, the other is indelible.

I wish to show now that in the affection under consideration, the loss of pigment in the whitish macules follows antecedent hyperpigmentation. Such a change in portions of skin from an abnormally dark to an abnormally light hue, would be merely an instance of that transformation which frequently takes place, *e.g.*, in the crescent edge of a patch of ordinary vitiligo. Increased pigmentation following syphilitic lesions is a matter of every-day observation. On the other hand, a diminished pigmentation following such an increase has been noted by Taylor and Atkinson as taking place in syphilitic papules upon the negro. I believe that a similar pathological process obtains in case of vitiligo occurring in syphilitic subjects, for I am certain that in all cases the pale circular patches occupy the site of pre-existing lesions. The fact that the vitiligo usually develops shortly after the disappearance of the early eruptions supports the belief, and a more decided confirmation I find in my notes of the following case:—

Mr. J. S., a young man of lymphatic temperament, came to me with a chancre in July, 1877. A macular syphilide appeared in August. In September there was a copious eruption over the body, consisting of both miliary and lenticular papules, which eruption, according to my notes, was unusually *marked upon the face and neck*. This faded gradually under mercurial treatment. In November, or about three months after the outbreak of cutaneous syphilis, and at a time when the eruption had nearly or quite disappeared, a vitiligo was observed upon the neck. The skin of this region presented the characteristic dirty appearance. Upon the sides of the neck small, circular, whitish macules were seen, varying in size from a pea to a cent, and irregularly distributed over the surface after the manner of an ordinary macular syphilide. The larger of these macules exhibited a small dark central spot, like a very faint bull's-eye. The abnormal condition of the skin was not at all striking in appearance, and the pallid macules were far less noticeable than the dirty hue of the surrounding skin.

Mercurial treatment has been continued in this case, and when the patient was last seen the syphilitic eruption had entirely disappeared, while the discoloration of the neck remained. I desire to call attention to the fact that in this case the syphilitic eruption was noted as being unusually copious upon the neck, and that the vitiliginous macules which followed the congestive maculo-papules of syphilis not only appeared in the cervical region, but exhibited a distribution similar to that of the preceding eruption. I could not state from actual measurements that the vitiliginous macules occupied the exact site of antecedent syphilitic lesions. It is quite probable, however, that they did; and if I am not mistaken respecting the nature of the dark central spots, it is absolutely certain that they did.

The dark spots in this case were, without doubt, a relic of the pigmentation following the syphilitic papules; and it is evident, therefore, that the number and location of the vitiliginous macules was determined by the number and location of the preceding syphilitic lesions. These dark points, noted at the centre of the circular, whitish macules, constitute a feature of which no mention has heretofore been made by writers on the pigmentary syphilide. They are undoubtedly of rare occurrence, and if present at all, are only to be observed in the incipient stage of the affection.

The development of this vitiligo of syphilitic origin would seem, then, to take place in the following manner: The maculo-papules of early secondary syphilis, whether upon the neck or elsewhere, induce primarily a hyperpigmentation. At the periphery of these dark stains, an atrophy or degeneration of the pigment cells ensues. The dark stains dwindle to dark points, which speedily disappear, and circular or oval whitish macules of a larger diameter than that of the original lesions occupy their site. The portions of skin adjacent to these whitish macules become, as in ordinary vitiligo, the seat of a complementary pigmentation, and present a discoloured appearance, which usually forms the most prominent feature of the affection.

And now, to sum up in brief the salient points of the foregoing, allow me to present the following statements:—

I. The pigmentary syphilide as described by Hardy and others is not a direct manifestation of syphilitic disease.

II. It is a non-specific vitiligo, which, though syphilitic in its origin, cannot be properly classed among syphilitic lesions.

III. It is most frequently observed upon the neck, but may be well marked upon various other portions of the body.

IV. It is usually more apparent upon females, but is by no means peculiar to this sex. Nor is it always associated with a fair complexion.

V. The whitish macules, which constitute the most important feature of the affection, are not merely white by contrast with a hyperpigmented background, but in consequence of a loss of pigment.

VI. These macules occur upon the site of pre-existing syphilitic lesions, remains of which may sometimes be observed as dark central points.

VII. The hyperpigmentation surrounding the macules is of secondary importance, although in the majority of cases it constitutes the most striking feature of the affection.

208 WEST THIRTY-FOURTH ST., NEW YORK.

ARTICLE V.

ON THE VISUAL ACUTENESS IN AMETROPIA OF HIGH DEGREES. By SWAN M. BURNETT, M.D., Lecturer on Ophthalmology, Medical Department of Georgetown University, Washington, D. C.

CONVENTIONALLY the acuteness of vision (V) is marked by the smallest visual angle under which certain objects (test-letters) are distinctly seen. The formula expressive of this is $V = \frac{d}{D}^1$, wherein d expresses the distance at which the object is seen, and D the distance at which it should be seen under an angle of five minutes; the separate lines composing the letter appearing under an angle of one minute, which is accepted as being the (mean) smallest angle under which two objects can be clearly differentiated from each other. For instance, No. 5 of Snellen's test-types appears under an angle of five minutes at a distance of five metres; No. 1 at a distance of one metre, etc., and when they are seen with distinctness at their respective distances V is said to $= \frac{5}{5}$ or 1.

In this determination, no account is taken of the distance of the object or the size of the retinal image, except in so far as they are related to the visual angle; and while it is a fact that the visual acuteness depends directly upon the size of the retinal image, the visual angle in cases of emmetropia is a measure of the size of this image, and thus indirectly of the visual acuteness. For such cases, therefore, we are justified in taking measurements of the acuteness of vision, by test-types constructed on this basis, as accurate.

But the large proportion of cases in which we test and record the visual acuteness, is not of emmetropia. In these cases there is an error in the refraction of the eye, or, to speak more correctly, there is a deviation from the normal relation which should exist between the length of the eye and its refracting power.

It is a well-known fact that under the same visual angle, the size of the retinal image is modified by the position of the second nodal point, in respect to the retina—the further removed it is from the retina, the larger the image, and the closer it is, the smaller. With but few exceptions, all cases of emmetropia (excluding astigmatism) are due to an anomalous position of the second nodal point in regard to the retina. In myopia, on account of the elongation of the globe, the retina is removed from it; in hypermetropia, where the eye is abnormally short, the retina is approximated to it. In such cases, therefore, it is evident, since the acuteness of V is directly dependent upon the size of the retinal image, that a common visual angle cannot be accepted as a measure of visual acuteness.

¹ Snellen. Optotypi ad visum determinandum, 1875.

In noting the influence which the two forms of anisotropia exert on visual acuteness, we shall first consider its action on distant vision; and primarily, the case of myopia, and in that form where the globe is elongated and the distance between the second nodal point and the retina widened.

In order for the myopic eye to have distinct distant vision, it must be armed with a concave glass of such a strength as to give parallel rays a direction as if they came from the *punctum remotum* of that eye.

In giving a distinct image of distant objects, however, the auxiliary lens alters the position of the second nodal point; it is brought closer to the retina. The exact amount of this displacement has been calculated by Knapp,¹ Landolt,² Mauthner,³ Woinow,⁴ and others. These calculations show that when the neutralizing auxiliary lens is worn at the usual distance, half an inch, from the cornea—which is about the anterior focal point of the emmetropic eye—the second nodal point is made to occupy a distance from the retina equal to that found in the emmetropic eye, *i. e.*, fifteen millimetres (taking as the basis of calculation the reduced or diagrammatic eye of Listing and Donders).⁵ The result is that the retinal image of a distant object in the myopic eye armed with a neutralizing glass placed in its anterior focal point, is of the same magnitude as that of an emmetropic eye (Landolt, *l. c.*); because, not only is the distance from the second nodal point to the retina the same, but as Knapp (*l. c.*) has shown, the correcting glass exerts no influence whatever upon the visual angle. The position of the first nodal point is not affected by the correcting lens, and so long as it is unchanged, the visual angle must remain the same; it is only when both nodal points are made to advance or recede together, that the visual angle is modified.

If, then, the retinal image is the same in the corrected myopic eye as in the emmetropic eye, the visual acuteness ought to be the same. And, indeed, this would be the case, if there were no change in the retina accompanying the alteration in the form of the myopic eye. Knapp (*l. c.*) contends, however, that there is an alteration in the position of the percipient retinal elements, and of such a character that the elements are separated from each other, and the same number made to occupy a larger extent of space than they would in the emmetropic eye. He assumes that the number of retinal elements is the same in all eyes, and that they are

¹ Archiv for Oph. and Otol., vol. i., 2, p. 377, *et seq.*

² Handbuch f. gesamt. Augenheilk., von Gräfe u. Sämisch, B. iii. p. 10, *et seq.* Le Grossissement des images ophtalmoscopiques, Paris, 1874.

³ Vorlesungen über die Optischen Fehlen des Auges, pp. 149-176, 1872.

⁴ Archiv f. Oph. xv. 2, p. 144, and xviii. 1, p. 349.

⁵ The discrepancy in the figures obtained by different observers for each lens, is to be accounted for, in part, by the difference in value of the same number of lens, as expressed in millimetres, used by each. One great advantage from the introduction of the metrical system is, that these values being the same, the results of all calculations must exactly correspond.

scattered over a larger space in *M*. and are more compacted in *H*. As a consequence of this, a retinal image of the same size would cover more retinal elements in *H* and fewer in *M*, than in the emmetropic eye, and therefore the smallest perceptible image in *M* must be larger, and in *H* smaller, than in *E*. He has constructed a table showing what the modification of *V* is for each correcting lens, as representing the amount of separation of the percipient elements in *M*, and of their consolidation in *H*, taking *E* and a visual angle of five minutes as a standard. He takes as an expression of this the distance at which, after correction, the ametrope should read No. 20 (old style) of Snellen. Of course in *M* it is shorter and in *H* it is farther than in *E*.

Now, with our present knowledge, physiological and pathological, of the retina, it would be impossible to assert, with positiveness, that there is such a change in the position of the retinal elements in the two forms of ametropia.

On this point Donders,¹ in speaking of his own dissections of the retina in such cases, says:—

“But what here has particular bearing, how far morbid changes occurred in these percipient elements, how far they were more separated than in the normal eye, how the bulbs in the yellow spot, and particularly in the fovea centralis, are circumstanced in high degrees of atrophy: on these points I cannot speak with certainty.” (p. 378.)

However, in speaking of the same subject further on, he says:—

“It is easy to see, although it has not been proved by accurate microscopic investigation, that under such extension the outermost layer, which consists of radiatingly-placed, very small bulbs, as we have seen, must suffer; that these bulbs, at least, must be separated, irregularly distributed, and made oblique, and that they must easily be actually destroyed. . . . Where there is vital metamorphosis of matter, change of form much more readily takes place under the molecular change, without disturbance, than in solid fibrous parts, and in this respect the retina has a great advantage over the sclerotic.” (p. 382.)

And again:

“But on the other hand, the surface of the retina is also larger, and therefore in a given plane comprises fewer percipient elements.” (p. 390.)

It would appear, from the above, that Donders has accepted the separation of the retinal elements in *M*, not from anatomical demonstration, but because it best explained the diminution of *V* as found in such cases.

In his tables Knapp shows that in *M* of less than 3.5 D ($\frac{1}{16}$) when neutralized the decrease of *V* is not practically of any moment, but above that is sufficient to be taken into consideration. When the *M* amounts to 15 D ($\frac{1}{24}$), *V* is so much diminished in correction by glasses, that Snellen No. XX. (old style) can only be made out at 14½ feet.

We find a totally different state of affairs in *H* dependent upon a shortening of the globular axis. As there is no such thing as negative accommodation, that is to say, the eye not having the power to *lessen* its refractive condition, the myopic eye cannot, unaided by extraneous lenses,

¹ Anom. of Refrac. and Accom.

have distinct vision at a distance. In II, on the other hand, where there is a relative deficiency of refracting power, the eye can, by means of the muscle of accommodation, increase its refraction, and obtain a distinct image of distinct objects. What, then, would be the visual acuteness in this case as compared with the emmetropic eye? As we have already seen, the visual angle cannot any longer, in such a case, be taken as a measure; we must fall back on the size of retinal image. We have also further seen that the size of the retinal image is regulated by the distance of the second nodal point from the retina, and our task in this instance, as in the other, is to find this relative position of the second nodal point. As the power of refraction of this hypermetropic eye is the same as that of the emmetropic eye, the optical constants are the same, and the position of the second nodal point in relation to the cornea is unaltered; it is found, therefore, five millimetres (in the diagrammatic eye) from the apex of the cornea. But as the length of the eye is reduced, the distance from the second nodal point to the retina is diminished; instead of being, as in the emmetropic eye, fifteen millimetres, it is less, and, of course, the distance is smaller in proportion as the eye is shorter. The effect of this must, evidently, be to diminish the size of the image. We know, however, that the hypermetropic eye, in a state of rest, does not unite parallel rays upon the retina; it is only when it puts forth an accommodative effort that this can be accomplished. It remains, then, to determine if the act of accommodation can change the size of the retinal image by altering the position of the second nodal point.

Manthner (*l. c.*) has made the calculations necessary to determine this point, and has found that the act of accommodation exercises but an insignificant influence on the position of the nodal points, the advance of these points, in an accommodation of 9 D ($\frac{1}{4}$), amounting to only 0.4 to 0.5 millimetre, which is so small as to be entirely neglected so far as its influence on the size of the retinal image is concerned. The size of the retinal image of a hypermetrope, who corrects his faulty refraction by means of the accommodation, is, therefore, smaller than in the emmetropic eye.

It is quite otherwise, however, when the II is corrected by a lens placed in the anterior focal point of the eye. The correcting auxiliary convex lens causes the second nodal point to advance to such a position, that it shall be at the same distance from the retina as in the emmetropic eye. As in M, therefore, the size of the retinal image in II corrected by glasses at one-half inch from the eye, is the same as in E.¹

¹ That there is an appreciable difference in the size of the retinal image in II, when corrected by glasses, and by an increase in the curvature of the crystalline lens, has been experimentally demonstrated by Landolt on his artificial eye, for a description of which see "The Introduction of the Metrical System into Ophthalmology," *Royal London Ophthalmic Hospital Reports*, May, 1876. When in Paris in 1876, I had the opportunity of experimenting with him on his eye, and the results obtained accorded very closely with the calculations he had made.

The visual acuteness, therefore, would be the same if the image covered the same number of retinal elements. But, according to Knapp and Donders, the number of percipient elements covered by this image is greater than in a correspondingly large image in E, and hence the acuteness of V is increased, and, of course, increased in proportion to the increase in the strength of the glass used.

It is in these cases of H that we are in condition to compare the visual acuteness with and without glasses, because, as we have said, the anomaly in refraction can be corrected, either by the accommodation (at least, in cases so high as 7 D ($\frac{1}{5}$)), and by the auxiliary lens. I think the experience of the profession will bear out the assertion that visual acuteness in the higher forms is not so good when the H is overcome by the accommodation as when corrected by a suitable lens. I think that in cases so high as $\frac{1}{8}$ (4.5 D), which a young person of fifteen years could easily overcome by means of the accommodation, the visual acuteness for distance rises very materially when neutralizing glasses are applied. This increase can, of course, only come from an enlargement of the retinal image, brought about by the lens, since its *distinctness of outline* is the same in both cases.

It is, however, in hypermetropic cases of high degree that we meet with the instances of lowered visual acuteness which cannot be accounted for by either regular or irregular astigmatism, and which it has been the custom to refer to an arrest of development. The hypermetropic eye is considered by all authorities, I believe, to be one that has been arrested in its development, and thus failed to attain to the dimensions taken as the normal standard; and, in many instances, this arrest in development has not been limited to the globular case itself, reducing it in its dimensions and notably in its antero-posterior axis, but has extended to the nervous apparatus, and either diminished the number of the percipient elements or impaired their function. That the number of retinal elements is the same in the myopic eye as in the emmetropic is probable, since they may both have been originally of the same size, but, I think, clinical observation would hardly justify us in assuming so much for the hypermetropic eye.

It has been shown that, for distant vision, myopes have lessened retinal images, and consequently diminished visual acuteness, when their anomaly is neutralized by glasses placed in the anterior focal point of the eye; and that hypermetropes, under the same conditions, have larger images and better vision than when their hypermetropia is overcome by accommodation, and presumably better than in emmetropia.

It now remains to examine into the state of near vision in each case, and note its relation to distant vision. And this is a point which, though touched upon by some—especially Donders and Landolt—has not been yet considered in detail to the extent it deserves. Unless it be taken into

consideration, we are liable to fall into errors, and refer the diminished vision we may find in any case to a wrong cause.

If we have a case of myopia, for example, where, with No. 9, No. 18 of Snellen is read at six metres, we should not be justified in considering vision as only one-third of the normal ($\frac{1}{3}$), for upon the examination of near vision we might find it quite up to the standard.

There are two causes for the superiority of near over distant vision in M— 1st, the larger retinal image; and 2d, the larger visual angle, which it is possible to obtain without a strain on the accommodation.

We have, indeed, recently examined a case where just these conditions were present.

A girl of thirteen years could only read part of No. 18 at six metres with No. 9 ($\frac{1}{4}$), combined with a cylindrical No. 1, axis horizontal. This was the best distant vision a prolonged and close examination was able to afford her. Yet without glasses she read Snellen 0.3 (J. 1) at ten centimetres with ease.

That the retinal image in the near vision of myopes is larger than that of distant vision through glasses, or even in the emmetropic eye, is readily understood from what has been said about the position of the second nodal point in the myopic eye. In the unarméd myopic eye, at or within its punctum remotum, the second nodal point remains essentially in the same position as that of the emmetropic eye. The distance from this point to the retina, however, is greater than in the emmetropic eye. On account of the increased length of the globe, as we have already shown, the retinal image is correspondingly large. If, however, we accept the theory of Donders and Knapp that, on account of the stretching of the retina, this enlarged image covers only the same number of elements as in the emmetropic eye, and if, in this stretching, there has been no damage done to the elements which impairs their function, the near vision of myopes, without glasses, should be as acute as that of the emmetropic eye. In all cases, therefore, of myopia from stretching of the globe, the visual acuteness at a distance, after correction by glasses, should never be accepted as expressive of the best vision that eye is capable of. The myopic eye of this description, as is well known, is liable to very grave pathological alterations of an inflammatory character, and it is important that we know if such processes have done serious damage to the percipient retinal elements. If we find, on examination, that near vision approximates to the accepted normal, then we may justly conclude that these elements are not seriously affected.

Another reason why both near and distant vision should be noted is that the difference between the two is liable to great variation. Thus a woman of thirty-five was able to read most of Snellen's XXX. (old style) at twenty feet with $-\frac{1}{2}$ (-18 D.), and J. 1 was read fluently at six centimetres. Such good distant vision is seldom met with in myopia of such a high degree,

though it still falls below the acuteness which Knapp has calculated a myope should have whose anomaly is corrected by a lens of two inches focal distance. According to him, this woman should have been able to read Snellen's XX. at about fifteen feet ($V = \frac{2}{3}$), whereas she had only $V = \frac{2}{5}$. Both in this case and the other just related, there was great thinning of the choroid, and large crescents at the optic nerve entrance; in the latter case the atrophy completely surrounding it.

In hypermetropia, where the eye is shortened and the nodal points have the same relative position to the cornea as in the emmetropic eye, it is evident from what has been already said, that the retinal image in near vision, though it be rendered distinct through the accommodation, is smaller than in E. But, if it covers the same number of elements as the larger image would do in E, V should be as acute, and when the faulty refraction is corrected by a glass placed in its anterior focal point, the image should be of the same size as that in E, and the visual acuteness greater. We are in great need of statistics on this point, but so far as my individual experience goes, it would tend to refute this idea. In H of high degree I have rarely found either distant or near vision to come up to the normal, after correction. This is, I think, to be accounted for, abstraction made of astigmatism, regular and irregular, by the arrested development of the percipient elements. However well the theory of Donders and Knapp may apply to cases of M, where we can see for ourselves the stretching of the retina, its application to the condition of H, where there is an evident arrest in the developmental process, is attended with extreme difficulty, and is hardly, I think, supported by the facts in the case.

But H and M may come, not only from an alteration in the length of the eyeball, but also from an alteration in its *refraction*, and a few words must be devoted to these conditions. The essential results in these cases are the same, though arrived at in a different manner.

We will take, first, a case of M from increase of refraction. Here the eye is of normal length, and the position of the nodal points in regard to the retina, though altered somewhat, is not more so than in an eye which is made myopic through its accommodation; and, as we have seen, we are able to neglect this, practically. The image of a distant object, therefore, formed on the retina by means of a correcting auxiliary lens, must be smaller than in the emmetropic eye, since the second nodal point is brought nearer to the retina; the acuteness of vision for distance is therefore less, because the retinal elements being the same as in the emmetropic eye, this smaller image covers a less number. In near vision, on the other hand, the image being of approximately the same size as that of the emmetropic eye during accommodation at the same distance, the visual acuteness must be the same.

In hypermetropia from a diminution of refractive power, the reverse

obtains. Here, through correction by glasses, the second nodal point is removed from the retina, and the size of the retinal image correspondingly increased; and as the retinal elements have the same compactness as in the emmetropic eye, the visual acuteness should be greater. The most prominent instance of this condition is, of course, aphakia; and we should here have the opportunity of verifying the calculations made by Knapp and others, showing the increase above the normal standard, of the visual acuteness, in corrected cases of aphakial eyes. When I say that an aphakial eye corrected by a $+ \frac{1}{3}$ (O. S.) should be able to read Snellen's XX, at about 25 feet, according to these calculations, it will be readily seen how extremely rare it is for those who have been operated on for cataracts to have $V = 1$. There are factors, however, operating in this instance to lessen the visual acuteness, of which account should be taken. Patients on whom extraction is made are generally old, and there is always a greater or less loss of sensibility of the retina attending age; and the cataractous eye is, from the very circumstance of its having become cataractous, a diseased eye. So we should, in the majority of instances, not look to obtain $V = 1$.

To sum up, then, the facts, which the investigations to which we have referred have brought out in respect to the acuteness of vision of anisometropia of high degrees, we would say:—

1. That a common visual angle cannot, in such cases, be accepted as the unit of measurement, since it no longer is an index of the size of the retinal image.
2. That in M, distant vision through neutralizing glasses is less acute than in the emmetropic eye, while in near vision, without glasses, it is the same; that in H, distant and near vision, where the anomaly is corrected through the accommodation, are less acute than where it is corrected by glasses, and that in the latter case they should be better than in E, if the theory of an unvarying number of retinal elements in all human eyes be accepted.

It seems, probable, however, that this theory does not hold good in a large number of cases of H, and consequently V, when corrected by glasses, instead of being better, is only the same, if so good, as in E. We are in want of accurate statistics on this point.

3. That it is important to note, particularly in the case of M, the visual acuteness, both for near and for distant vision. We often find greater discrepancies between them than the theoretical calculations would allow us to expect. We thus acquire some idea of the extent of damage done to the percipient elements by the morbid processes at work at the fundus of the eye, in those cases where the M is due to stretching of its coats.

It has seemed to us unnecessary to give any tables showing the amount of increase and diminution of the visual acuteness caused by auxiliary lenses in cases, respectively, of H and M. However accurate they may

be theoretically, in practice we find so many other factors in the case that we cannot trust them as guides. It appears to us sufficient to know that there is an influence exerted by them, and to give it due consideration in connection with the other facts.

FEBRUARY 1, 1878.

ARTICLE VI.

LUPUS OF THE LARYNX, A CLINICAL STUDY. By GEORGE M. LEFFERTS, M.D., Clinical Professor of Laryngoscopy and Diseases of the Throat, College of Physicians and Surgeons, New York; Laryngoscopic Surgeon to St. Luke's Hospital, etc.

WHETHER the rarity of recorded instances of lupus of the larynx depends upon a paucity of investigation, whether the disease will oftener be found if it be looked for, lupus of the cutaneous surface not being such a very unusual affliction, or whether the morbid process in truth really involves the laryngeal parts but seldom, are questions, it seems to me, not only of general interest, but likewise of diagnostic and therapeutic importance, and ones that can only be decided by further observation and with the aid of the laryngoscope. As the question stands to-day, we must regard the laryngeal complication as a rarity. I have searched the literature of the subject with but meagre results. The majority of writers pass it by without mention;¹ a few refer to the investigations of others;² while in four instances³ alone is original observation, the result of personal examination, to be found upon record. Türek⁴ heads this list with four cases, in which there was no doubt as to the correctness of the diagnosis, and one in which he confesses himself as not being certain. Their histories, together with two drawings of the laryngoscopic picture, will be found in his classical work, and, though the earliest, will still be found the best contribution to our knowledge of the disease in question. Tobold⁵ follows with an incomplete account of two cases; while more recently Ziemssen⁶ and Grossman⁷ have each added one case to the general fund. Ten cases then, if I include my own, are upon record, and it may be of interest to note that in all of them, with the exception of Ziemssen's, lupus of the cutaneous surface, face, back, arms, etc., likewise existed.

¹ Porter, Ryland, Voltolini, Rühle, Columbat, Marcet, Navratil, Sörk, Fauvel, Durham, Dufour, Baumgartner, Mayer, Schnötter, Cohen, Gibb, Bruns.

² Mackenzie, Mandl.

³ Türek, Tobold, Ziemssen, Grossmann.

⁴ Türek, *Klinik der Krankheiten des Kehlkopfes*, 1866, p. 425.

⁵ Tobold, *Laryngoscopie und Kehlkopf Krankheiten*, p. 307.

⁶ Ziemssen, *Cyclopaedia*, vol. vii, p. 854.

⁷ Grossmann, *Allg. Wiener Med. Zeitung*, No. xx, 1877, p. 182.

My personal experience in the diagnosis and treatment of affections of the larynx, not an inextensive one, agrees with the facts developed by a research into laryngoscopic records, and the one case which I have had an opportunity of observing seems to me, therefore, to assume, on account of its very infrequency, a practical importance that renders it, as I have said, of general interest, and makes it one that it is desirable to place upon record. Its history is as follows:—

Mrs. M. J. M., *et.* 44, consulted me in October, 1877, at the request of Dr. Bulkley, on account of a serious and progressive difficulty in deglutition. For years she has been a victim of lupus, and the terrible disfigurement of her face, associated more lately with a distortion of the eyelids and mouth, which interferes markedly with the proper performance of their functions, together with the trouble above alluded to, has done much to render her life a most miserable one. According to her statement, the dysphagia was rapidly becoming excessive, and, though she now suffered no pain, great difficulty was experienced in obtaining sufficient nourishment, the deglutition of solids being nearly impossible of accomplishment, while fluids at times caused her great distress by passing into the larynx, and causing violent and paroxysmal cough. No other symptoms other than a sense of fulness and distressing obstruction in the throat were complained of, and her voice is unimpaired. She dates the inception of her throat affection one year since; at which time the throat, having been previously perfectly healthy, as she believes, certainly as far as any rational symptoms go, commenced to give her pain at and after each act of deglutition. The pain is described as being sharp and lancinating, extending into the left ear, and being mainly confined to the right side of the larynx. It continued with varying intensity up to two months ago, when it ceased.

For a length of time the patient has been under the care of Dr. L. Duncan Bulkley for treatment of the cutaneous manifestations of her disease; and, recognizing the important bearing which they have upon the correct and differential diagnosis of the laryngeal complication, I have asked him to give me an expert description of them. He has kindly complied as follows:—

“Mrs. M. first came under my care for her lupus December 14th, 1876, when the following history was obtained: When thirteen years of age the disease first appeared upon the left side of the nose in a tubercle resembling in nature those now present on some portions of the eruption. During the thirty-one years which have elapsed since that time the eruption has progressively spread, although she has been under medical treatment for the greater part of the time, and has followed each measure for a long period.

“The present condition of the eruption may be thus described: The entire face is involved in the lupous process, from the border of the hairy scalp above to the middle of the neck below, and from an inch behind one ear, over to the same distance behind the other, with the exception of two small patches of healthy skin, perhaps of a total of two square inches, at the border of the hair, one above each eye. The whole of the surface is of a dark red colour, shiny, with many very thin and very transparent scales, attached at one edge, of greater and smaller size. There are at present a few spots of superficial ulceration, as on the left cheek, at the corners of the mouth, and at the meatus of the left ear.

“Most of the surface has a pulpy feel, which is exhibited most strikingly at the lobes of the ear, which are lost entirely in the extension of the disease, and are bound down to the sides of the cheeks; the whole skin tissue of the external ears is infiltrated, even deep into the meatus; they are immovable, and the sulcus behind them is lost. The end of the nose has disappeared in the progress of the disease, mainly, she says, from the effect of previous cauterizations; the lips are largely infiltrated, so that the mouth remains open most of the time, and the lips do not meet in conversation. Upon the cheeks the inroads of the disease have so replaced healthy skin, and so much cicatricial tissue has formed, that very serious ectropion exists in both eyes, causing her very much distress; the upper eyelids are also the seat of lupous deposit.

“While the mass of the eruption presents the almost uniform appearance common to these cases, at the margins the separate elements of the disease are clearly visible, both in the rather irregular borders, and in the isolated, dark-red, pulpy, and slightly scaly tubercles of various sizes located near by.

“There is also one more patch of typical lupus situated upon the back, over the lower angle of the right scapula, of the size of the palm of a small hand, and composed of a number of isolated and confluent, slightly scaly, dark-red, and pulpy tubercles. There is no other cutaneous manifestation of lupus save these mentioned.”

Such, then, is the history of the patient, and careful questioning fails to develop any further points of importance. Her antecedents and personal condition in respect to any possible evidences of tuberculosis, syphilis, and carcinoma received the closest and most extended investigation. Syphilis she denies absolutely; and, being an intelligent and trustworthy woman, her statement is entitled to belief, confirmed as it is by an entire absence of any physical manifestation of the disease. Pulmonary tuberculosis is excluded by an examination of the chest, which is found to be, in all respects, normal, while the diagnosis or suspicion of carcinoma is entirely unsustained by either the hereditary or personal history and by the absence of clinical corroborative evidence. The history, then, as far as its facts in relation to her throat trouble go, is negative, or at least undecided, for the rational symptoms give us no clue to the nature of the pathological process. The laryngoscope now comes to our aid, and perhaps alone. Certainly, when its revelations are taken into consideration with the condition of the cutaneous surface, it solves the question, and gives good reason, I think, for making the diagnosis that I have.

The pharynx, which is first inspected, presents an unusual, peculiar, and perhaps characteristic appearance—one which, once seen, would be difficult to forget or confound with other and common lesions. It resembles nothing that I have before observed, except in some cases of advanced phthisis, when some little similarity between the two conditions could perhaps be traced. The first points which strike the eye are that its parts are unsymmetrical, that the uvula is drawn to the right and downwards, the corresponding pillars of the fauces being much shortened, and that the general hypertrophy or thickening of all the tissues, but notably of those upon the right side, is remarkable; furthermore, that the right pillars of the fauces, the free border of the palatine arch and the uvula, the latter increased to more than two-thirds its original size, are thickly studded with fleshy granulations, nodules, or tumefactions, which cause them to present a most irregular outline. Here and there are scattered small white points,

which, together with numerous places denuded of epithelium and small superficial *worm-eaten* ulcerations, go to make up a marked and peculiar picture, to which I am afraid my description does not do justice. The posterior pharyngeal wall presents this same thickened and irregular appearance, and at a point corresponding to the free edge of the epiglottis, which lies in front. Its surface is broken by three small but deep circular ulcerations, with thickened edges. Above—that is, behind the velum—the parts are not hypertrophied to the same degree as below, but present all the evidences of an old catarrhal inflammation.

The base of the tongue, so thickened that it renders a laryngoscopic examination somewhat difficult, is likewise dotted with these same fleshy granulations, appearing much the same as the normal papillae, which, in this instance, are hypertrophied.

If we next turn to the larynx—the point, perhaps, of greatest interest—the laryngoscopic mirror will reflect the picture which is represented in the drawing that I have made (Fig. 1). The essential pathological element, which is indicated by the appearances, is hypertrophy of tissue—a hyperplasia and infiltration that has changed to a marked degree the normal configuration of the parts. The second element is ulceration. Taken together, they present a type of disease that is best represented, were I to seek for a familiar example for the sake of comparison, by tubercular laryngitis in its later stages, but with certain marked differences. To go more into detail, I find the epiglottis so hypertrophied that it not only presses against the dorsum of the tongue, closing the valleculæ, but likewise overhangs the superior laryngeal aperture in such a manner that a view of the interior of its cavity is much obstructed. It is hard, unyielding, immovable; its surface almost completely covered by minute fleshy projections; while here and there are the same superficial *worm-eaten* ulcerations, as are seen in the pharynx. This granular appearance of the epiglottis—and I may compare it to the surface of an old hardened and indolent ulcer, such as we see at other parts—is certainly unique, and does not resemble in any degree the smooth surface presented by the *turban-shaped* epiglottis of laryngeal phthisis; still less does it simulate the inflammatory tumefaction which may accompany a syphilitic ulcer of the part. Is not this peculiar appearance, then, if further observations prove its reliability, a differential diagnostic mark between the above three affections—Lupus, Phthisis, and Syphilis?

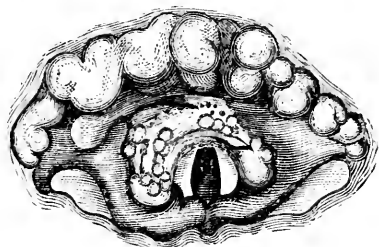


Fig. 1.

The remaining portions of the upper larynx present alone evidences of simple hypertrophy or plastic infiltration of its tissues. The aryteno-epiglottidean folds—the membrane covering the arytenoid cartilages, and the parts embraced in the posterior commissure of the larynx, are blended into one undistinguishable mass as far as anatomical configuration and sharpness of outline are concerned. The interior of the larynx, on the contrary, is as yet unattacked by the disease, neither false nor true vocal cords have suffered any change, and the latter may be seen, of normal figure, moving freely during phonation.

Such being the condition, the question of diagnosis at once forces itself upon us. Is the view that I have taken as to the nature of the morbid process correct or not? The question is of importance and interest, more perhaps from a scientific point of view than for any special bearing that it may have upon the question of treatment. Its difficulty of solution will be conceded, and I indulge in the hope that perhaps my description of the appearances, as I have observed them, may be of service in differentiating future cases from other diseased conditions of the larynx, which laryngeal lupus so much resembles. Now wherein does the difficulty lie, and what disease presents the nearest pathological type, as far as laryngoscopic appearances go, to lupus? I answer unhesitatingly, laryngeal tuberculosis, and believe that in the latter we have the great stumbling block to a correct diagnosis of the former. Both, to particularize, are characterized by general hypertrophy of the laryngeal tissues, mainly of the epiglottis and posterior portions of the laryngeal vestibulum, both present the same superficial *worm-eaten* ulcerations, especially in the earlier stages; both have as symptoms a profuse muco-purulent discharge, a sense of obstruction, of tumefaction in the throat—the dysphagia, the cough, and the same general laryngeal distress. Let us now see wherein they differ if they do, and if the differences are so marked as to be invariably diagnostic. The first question I can answer from the results of my experience and that of others, as found recorded in surgical writings, and point out certain variations in the general picture—variations that future observation may demonstrate to be constant, and therefore reliable and diagnostic. Upon the second I have considerable doubt, and must confess that the clinical history of the affected individual would have much weight with me in determining my opinion; in other words, I should want to see evidences of a lupus of the cutaneous surface to make assurance doubly sure. I should want to be able to exclude syphilis and phthisis from the patient's history, to confirm me in my view as to the pathological nature of his laryngeal lesion. Can Ziemssen, for instance, positively assert that the case which he reports as one of lupus of the larynx (*ibid*) was unquestionably so? There was ulceration of the epiglottis, it is true, and perhaps of an uncommon character, but nothing more. Neither lupus of the skin, nor of the pharynx was present; on the contrary, the patient, a girl of twelve, looked fresh and blooming. Syphilis he excludes, and justifies the exclusion by the failure of potash to control the disease. Tuberculosis he does not take into consideration, at least no mention is made of it, and on the basis of an ulceration of the epiglottis with numerous granulation nodules in the immediate vicinity is made the diagnosis of lupus, a diagnosis which he acknowledges was arrived at with difficulty, owing to the absence of any evidence of lupus of the skin, but which he considers was established by the course of the

disease, and the results of a local treatment by canterization. In this I must differ with him.

How now do phthisis and lupus of the throat vary, and what are the variations? In attempting to point out differences I must proceed with caution. Our experience of the disease termed lupus of the larynx is not as yet extensive, perhaps never will be, and subsequent observations must favour or disprove the truth of the points to which I am about to call attention.

First, then, the condition of the pharynx as I have described it in my patient is certainly met with in no disease except, perhaps, very rarely in advanced cases of general tuberculosis; and even in these there is only a simulated appearance. In them we do not find the distortion, and the very marked fleshy granulations dotting the parts, the extensive erosion, nor the hypertrophy of the mucous follicles at the base of the tongue, and the fleshy nodules in the same locality. The condition of the pharynx then, it seems to me, is, to say the least, very suggestive. Again, do we find in phthisis of the larynx the peculiar appearance of the epiglottis that I have called attention to in my case? an appearance which resembles perhaps a raspberry more than anything else, it is so nodulated, so covered with hard granulations. All the other points, the erosions, ulcerations, and the hypertrophy are common to both diseases, but the epiglottis in laryngeal phthisis is always free from hard granulations, and uniformly hypertrophied, even when its surface is broken by the slight losses of substance; the large, deep, and extensive ulcerations of the part, which have been met with in all the cases of lupus so far fully recorded (with the exception of mine), are certainly most infrequent in tuberculosis of this organ. Regarding the remaining portions of the larynx, as I see them in the present stage of my case, I say nothing; the appearances are not diagnostic, and might with equal justice be taken as an indication of either disease. If we now go one step further (and it is a step which, as I have said, I consider that we must take), and after rigid inquiry and exhaustive examination are able to exclude both pulmonary phthisis and constitutional syphilis from the patient's history, but find evidences upon the cutaneous surface of lupus, no matter how slight, are we not justified in making the diagnosis that we have, viz., lupus of the larynx? Other diseased conditions of the organ—carcinoma, œdema, etc.—which might possibly be confounded with the one under consideration, I do not now dwell upon; their general characteristics, laryngoscopic appearances, symptomatology, and clinical history render them, as a rule, easily recognizable.

Syphilis, however, presents greater difficulties, and deserves a word. The epiglottis, as is well known, is a favourite seat for the tertiary manifestations of the disease in the throat, which may likewise involve the pharynx; but if it do, its presence and its sequelæ certainly vary widely from the description of the pharynx that I have given above as occurring

in lupus. Regarding the larynx, it is only necessary to call the reader's attention to the character of the lesions in order that he may appreciate the differences which would render a diagnosis between the diseases one of no peculiar difficulty in the great majority of cases. A tertiary syphilitic ulcer of the epiglottis is usually single, has more or less of a circular form, with sharp, sometimes strongly elevated margins; a deep base, covered, it may be, with a tenacious yellow secretion; and, finally, it is surrounded by an areola of tumefaction, which is limited to the immediate vicinity of the ulcer itself, and is solely dependent upon the amount of inflammatory action which it has excited. In other words, there is no general hypertrophy of the tissues, no simple erosions, *worm-eaten* and superficial, no hard granulation tissue, no fleshy excrescences, as we see them in lupus. Finally, aside from the history of the case, we have other evidences of the disease in various parts, and the result of an anti-syphilitic treatment to guide us; certainly, together, a strong array of facts, incontrovertible in diagnostic worth if they occur in a patient who presents no evidences of lupus upon his skin.

Upon the questions of prognosis and treatment I have nothing new to add. An experience derived from careful observation alone can decide the points which are to-day unsatisfactory and incomplete. The "termination of lupus in the mucous membrane, as well as in the skin, is in ulceration, with progressive destruction. The healing of defects with an indurated cicatrix is seldom lasting, for usually new military eruptions, new lupus nodules, consisting of a young, generally very vascular granulation tissue, containing little round cells, and originating in proliferations of the connective tissue, and not of the epithelium, break forth in the immediate vicinity of the scar."¹ (*Virchow, Auspitz, Pohl.*) With such an outlook, prognosis can but be unfavourable.

Our treatment of the laryngeal complication is confessedly more or less empirical, being founded alone upon what experience has taught us in regard to the management of the lupus of the cutaneous surface. I can find but two cases (Türk, Ziemssen²) upon which to base any conclusions regarding the effects of therapeutic procedures. In these "either a partial retrograde development of the neoplasm, or an arrest of the process and partial atrophy of the new growth" is stated to have occurred under a prolonged treatment by large doses of cod-liver oil, and destruction of the lupous nodules by means of strong canterizations with the nitrate of silver. In my case, the latter were so badly borne that they were of necessity discontinued, and a much milder treatment, in which a modified Lugol's solution and sedative applications played an important part, substituted, to the great comfort and relief of the patient, but without amelioration of the local pathological changes. The time, however, in

¹ Ziemssen, *Cyclopædia*, vol. vii.

which they have been employed is comparatively short, too short to justify any deductions as to their success or non-success in arresting the disease. I therefore reserve the results of my experimentation, for it amounts alone to that, for future publication, when I likewise hope to give the facts developed by the investigations upon which I am now engaged, regarding the frequency of the laryngeal complication in lupus.

In conclusion, let me reiterate, with Von Ziemssen, "that there is urgent need of further observation both with regard to laryngeal lupus generally, and in particular with regard to its therapeutics."

Conclusions.—1. Lupus of the larynx, from our present experience of it, must be regarded as a rare disease.

2. Seven unquestionable cases and three doubtful ones are alone upon record; in all of the former, lupus of the cutaneous surface (face, neck, back, arms, etc.) coexisted.

3. The diagnosis may be made from the peculiar, and perhaps characteristic appearance of the pharyngeal parts, the nodulations, fleshy granulations, and ulcerations of the epiglottis primarily and specially, the clinical history of the patient, and the concurrent signs of lupus of other parts.

4. The differential diagnosis is not unattended with difficulty. Laryngeal tuberculosis, syphilis, and carcinoma all present certain points of similarity to lupus, especially the first named. From the two last, and likewise from *œdema glottidis*, chronic follicular laryngitis, etc., it may readily be distinguished. The pharyngeal appearances, the peculiar aspect of the epiglottic lesions, and the extent, location, and pathological character of the concomitant ulcerations, together with the clinical history and manifestations of a cutaneous lupus, will serve, if care be taken, to distinguish laryngeal lupus from laryngeal phthisis, as in the latter affection all of the above-mentioned signs fail, and are replaced to a great extent by others, which are certainly different, and generally regarded as diagnostic. These points are alluded to in detail in the article.

5. The prognosis is unfavourable, and the site of the disease at the entrance of the air-passages, manifestly exercises a marked influence as regards danger and duration.

6. Treatment is more or less empirical, being based at present alone upon what experience has taught of the treatment by destructive agents of the concomitant affection of the skin. Nitrate of silver and cod-liver oil appear to have been of service in certain instances, while in others they have failed; in still others a sedative and entirely unirritating treatment has succeeded best, if not in effecting a cure, or even arrest of the disease, at least in giving marked relief. Upon this question further light is earnestly to be desired.

ARTICLE VII.

A CASE OF PARALYSIS OF THE ABDUCTOR MUSCLES OF THE VOCAL CORDS PROBABLY DUE TO SCLEROSIS, AFFECTING PARTICULARLY THE NERVE ROOTS OF THE SPINAL ACCESSORY IN THE MEDULLA OBLONGATA AND SPINAL CORD. By BEVERLEY ROBINSON, M.D., Visiting Physician to Charity Hospital; to the Manhattan Eye and Ear Hospital, etc.

J. F., *et.* 44, married, special R. R. detective, presented himself at my throat clinic of the Manhattan Eye and Ear Hospital, October 27, 1877. In 1861, patient had "swellings" in groin, and two or three sores on prepuce, which were readily cured. In 1866, had again excoriations on prepuce, and a chronic urethral discharge; was treated with injections and inunctions of mercurial ointment for presumed constitutional dyscrasia. In the subsequent history, however, there are none of the usual syphilitic accidents, except an attack of ulcerative sore throat in 1868, which was believed to be of specific nature.

From 1868 to 1873, patient was well, although enduring great fatigue and exposed to rapid and considerable changes of temperature. In the fall of 1873, he became very much broken down by over-work, and suffered from pain and weakness in the back, weakness in the limbs, and partial loss of power in legs and feet, *viz.*, stubbed his toes against slight obstructions, locked one foot behind the other, heel of boot dragged and caught on the steps in going down stairs, etc. Some of these symptoms have disappeared (stubbing toes, locking feet); others remain, but have somewhat improved (pain in lumbar region of spine, dragging of feet); and the following analogous ones have manifested themselves: 1. Partial paralysis of bladder, shown by dribbling of urine, and loss of force in stream. 2. Loss of sexual power, which has come on little by little during the last three years, so that at times there is total incapacity to accomplish coitus. 3. A wavy, unsteady motion whilst walking—a sort of rocking on the feet, as if the soles of his shoes were round instead of flat. 4. A defect in writing, *i. e.*, the letters and words are not so correctly formed and placed as formerly, and there is a jerky motion of the pen; many times the last letter of a word will be made imperfectly, or the same letter written twice. 5. Depression of general nerve force, and unusual exaggerated excitability. 6. Difficulty in swallowing the last mouthful of any solid food. Has never been intemperate, and never used tobacco to excess. Until lately, he has been moderately successful in his profession. Unfortunately, for several years his married life has been unhappy, and he has many domestic troubles. His brain is lucid, and his eyesight normal. Difficulty of breathing, and partial loss of voice (hoarseness), were observed two years ago for the first time, and in this regard he has never improved. During the past month, condition of throat has rapidly grown worse, until now his breathing becomes oppressed upon slightest exertion. Has had two attacks of intense dyspnoea latterly, each lasting ten minutes, and brought on by a paroxysm of cough. They were so severe that, whilst they lasted, he thought he would die. Sleep disturbed by obstructed respiration and frequent cough.

Physical examination of larynx shows great narrowness of glottic opening during inspiration. The left vocal cord is nearly immovable, and remains close to the median line when he draws his breath; the right

vocal cord has slight mobility at this period, although much impaired in its functional power. The vocal cords and ventricular bands are red and somewhat swollen. No oedema, or ulcerations of orifice, or interior of larynx, and no deformity of its parts. After inspection with the laryngeal mirror, there are painful and prolonged paroxysms of cough, followed by very noisy inspirations. Patient during this period suffers great anxiety. R. Gibert's syrup of mercury ($\frac{1}{16}$ gr. t. in d.); garg. potass. chlor. ad saturand.

Oct. 29. Ordered in addition, potass. iodidi, gr. v. t. in d.; increase by ten grains each successive day.

Nov. 4. Less whooping and coughing; no more serious strangling; voice somewhat less hoarse in-doors; when he goes into open air hoarseness increases rapidly, and difficulty of breathing, with shortness of breath, comes on after very slight exertion; throat seems more sore, raw; the act of swallowing gives him pain, especially since he has taken iodide of potash in increasing doses; at beginning of deglutition has some difficulty of performing the act, afterwards it becomes easier; swallows liquids or solids equally well; is now taking 100 grs. of iodide of potash and $\frac{1}{4}$ gr. of biniodide of mercury in twenty-four hours. Ordered inh. tinct. benzoini.

5th. Nose and throat so much choked with mucus that patient can scarcely breathe; paroxysms of cough, to expectorate it; tears throat painfully; chest constricted; can't take a full breath; bowels somewhat loose. Stop iodide of potash; continue hydrarg. biniod.

8th. Breathes better since iodide was stopped; complains of sudden cramps at times in muscles of neck; for some months bowels regular; P. 84; R. 14, slow, regular, and deep; vocal cords scarcely separate at all during inspiration, and chink of glottis is very narrow in a permanent manner (only two or three lines transversal opening); the inflammatory appearance of the vocal cords and ventricular bands has improved. Repeat mercury and iodide of potash (5 grs. t. in d.)

12th. Cough frequent and harassing; moderate amount of sputa, frothy and purulent.

Auscultation of Chest.—Lungs perfectly healthy, in so far as physical signs can determine it; cardiac irritability; no signs of aneurism, or other intra-thoracic tumour; medication stopped.

17th. There is now complete paralysis of the abductor muscles on either side; during ordinary inspiration the vocal cords do not move either towards or away from median line. In forcible and deep inspiratory efforts they approximate slightly, and thus augment the already narrow glottic opening. An application has been made each day to the larynx of ferrie alum ($\overline{5j}$ – $\overline{5j}$) without increasing stridor or dyspnoea, or causing cough.

The reflex sensibility, in fact, of the laryngeal mucous membrane is nearly abolished.

19th. Pulse 90; temperature normal; patient suffers much from dyspepsia; occasional cramps in the muscles of the neck, especially the sternomastoids; has considerable uncertainty in the movements of his hands, and whenever he attempts to touch a particular spot, or take hold of an object, is unable to direct his movements with accuracy. His writing is notably imperfect, and he is obliged to use his pen in a special position. He writes with a quick succession of interrupted movements. He complains of a feeling of numbness on the left side of the chest anteriorly;

sensibility of his side about the same—sight normal; power to articulate words accurate, his disability depending solely upon a hoarse voice, which is now always present. R. Iodoform to larynx: Argent. nitratis, gr. $\frac{1}{4}$ t. in d. sumend.

20th. No external tumour over cervical region of spine; no pain on moderate pressure; has marked increase of saliva, which makes him swallow frequently, but it does not run from mouth; lips can be pressed together as well as formerly; complains of pains during last month in feet, knees, and ankles, and lower extremities generally. Eyes examined by Dr. David Webster, of New York city, with the ophthalmoscope, and "optic nerves were found hyperæmic, as shown by too numerous blood-vessels, though none seem to be enlarged." Pupils equal and react well to light. Palatal muscles contract when called upon to exert voluntary movements, as in saying "e" and "eh" with mouth open. Can, however, tickle uvula and pharynx almost with impunity without causing reflex action of retching. R. Galvanic current to neck (5 cells of 24 cell battery, Galvano Faradic Co., N. Y.) Repeat argent. nit.

23d. Weakness of lower extremities increasing; repeat galvanism.

28th. Has passed during past ten days large quantities of clear urine; heart beats irregular and intermittent. Repeat galvanism every other day. R. Tinct. cinchonæ comp. $\mathfrak{z}\text{ij}$, t. in d.

30th. Stiffening of left ankle-joint; legs bend under him in walking; erratic, darting, shooting pains in head and over whole body. Application of argent. nitratis, pulv. (gr. xv— $\mathfrak{z}\text{ij}$ bismuth) to larynx produced intense spasm, allayed by inhalations of ether.

Dec. 3. Complaints of pains in both knees and left ankle (joints not swollen); also of pains in heart and head. Pulse ranges from 85 to 100; return of spasmodic rigidity of muscles of neck; interrupt argent. nit.; continue galvanism.

5th. Lancing pains yesterday in calf of left leg; lasted about half an hour; had analogous pains in calf one month ago; they came on at intervals during three or four days; before or since that time till now does not remember to have had pains of similar description. These pains resemble the insertion of a sharp instrument gradually made into the flesh from above downwards; each pain lasts about thirty seconds, and another follows it at about a like interval; plantar sensibility, equal and normal on both sides. Has passed about four quarts of urine daily during past three weeks; has a feeling of stricture around abdomen; nervousness of hands is more in left than right. R. Phosphide of zinc, gr. $\frac{1}{16}$ t. in d.; galvanism.

10th. Urine examined; no sugar and no albumen. Repeat phosphide; mild faradic current to neck; condition not improved.

Remarks.—The case just detailed offers many points of interest to the neurologist, as well as to one interested in rare forms of laryngeal trouble. Here is an instance of a patient whose brain is clear and who has no physical evidence of intra-thoracic lesion, with absolute paralysis of the crico-arytenoidei postici muscles. There is nothing in the larynx which can satisfactorily explain the condition observed, and no compression from the existence of a tumour of the neck, even though it were detected, would at all account for the phenomena so fully described in the narration of my case. I have located without hesitation the primary lesion in the

spinal axis, and I consider the upper cervical region of the cord and a portion of the medulla oblongata to be *especially* affected at the time of writing. I have little doubt, however, that the lumbar region of the spinal cord is the seat of nerve degeneration, although it appears to me that there is now some improvement in the local condition at this level, over what existed a year or two ago, when there was more paralysis of the bladder, and more complete loss of sexual vigour than now exists. The nerve alteration of the medulla oblongata and of the spinal cord probably exists in patches, for I have been able to note no symptoms which show that the upper cervical nerves, or the facial and hypoglossal nerves, are at all implicated. The trigeminal nerves are perhaps slightly affected; witness the loss of reflex irritability of the post-pharyngeal wall. The optic nerves are nearly intact. Briefly, therefore, the lesion whatever it may be, in so far as the intra-laryngeal trouble is concerned, attaches itself evidently to the root origins of the spinal accessories and the pneumogastrics. No other hypothesis, in my opinion, is sufficient to explain the symptoms. What is the nature of this lesion? Is it syphilitic? I do not believe it is: 1, because the syphilitic history is doubtful in the extreme. 2, because my patient has had no well-defined specific phenomena of secondary or tertiary character, unless we accept as such a single attack of ulcerative sore throat "so called." 3, because anti-syphilitic treatment has had no influence upon the actual march of the disease.

Is the lesion one of sclerosis, or one of atrophy, or complete disappearance of nerve cells, due to some obscure cause, of which we do not as yet know the entire influence or effects? The first notion appears to me the correct one. In fact many symptoms point to the existence of locomotor ataxia, *i. e.*, the swaying gait, the inability to preserve equilibrium with eyes shut, the peculiar manner of writing, and on two occasions lancinating pains felt in calves of legs. The only two symptoms which point to Duchenne's disease (labio-glosso-laryngeal paralysis) are the increased amount of salivary secretion and the difficulty of swallowing the last alimentary bolus. The loss of reflex sensibility of the pharynx and larynx appear to me negative signs, in so far as the precise nature of the lesion is concerned.

There have been several cases of Duchenne's disease in which the patient has died without presenting evident signs of laryngeal paralysis; *when* laryngeal paralysis was present it was a loss of action in the adductors and not the abductors. Vocal sounds were rendered difficult—articulation was very greatly interfered with, and at times complete aphonia existed. In my case it will be remarked that except for the moderate hoarseness which exists, articulation is perfect. The pronounced laryngeal symptoms of my case are dyspnoea and fits of strangling. The cords can approximate in phonation, but they cannot separate during respira-

tory movements. We see at once the imminent danger the man is in from asphyxia. A sudden emotion, an acute cold, might occasion death at any time. I have notified him of these very possible, and even probable, contingencies. And yet I have not wished to urge tracheotomy, for whilst it is the only thing to be done in an emergency and when the man's life seems absolutely to require it, until that time I am loth to perform it. I feel satisfied, when once the tube is introduced, he will always have to wear it. I shall postpone this dark day for him so long as possible, in the hope that medication may be of some avail. If this patient dies within a brief period, it will of course be most interesting to know what changes have taken place in the medulla and cord, and how far, too, the abductor muscles of the glottis have become atrophied owing to prolonged inaction.

So far as I have been able to discover there is no recorded case of locomotor ataxia in which the laryngeal affection has been so *accurately* determined as the one I have reported. For this reason, if for no other, it is of great interest.

ARTICLE VIII.

CASE OF SPECIFIC STRICTURE OF THE RECTUM; ANTERO-POSTERIOR LINEAR RECTOTOMY; RECOVERY. REMARKS ON THE OPERATION. By FRANK DUDLEY BEANE, A.M., M.D., of New York City.

Mrs. B., *et.* 30 years, American, married, no children, no abortions, family history good. Has indulged in alcoholic stimulants, more or less daily, for the past eight years. Leucorrhœa eight years ago, which continued more than a year; since has been free from all vagino-uterine trouble. No history of uterine, peri-uterine, or abdominal affections. Denies venereal disease. Close questioning fails to develop the history of the ordinary "secondary" manifestations; but for the past year has been present on both legs, lower half, a *papular, copper-coloured* eruption, intermingled with *copper-coloured and brownish-yellow depressed circular cicatrices*. Suffers rheumatic (?) pains in the lower limbs at times, not constantly. Never treated for eruption. Her present disease began, she thinks, about twelve years ago as a mild diarrhœa; two or three unformed yellowish stools daily. Following upon this were scybalous, "loose," and bloody mucous stools, increasing tenesmus, anal pain, nausea, and loss of appetite. General health not apparently much affected.

Present Condition.—Apparently well nourished; urino-genital organs perform their functions normally; indigestion ("pain and weight"); four or five thin, yellowish, occasionally scybalous stools daily, accompanied by great tenesmus—almost every night obliged to sit upon the vessel half a dozen times, strain half or an hour at a time, a muco-purulent discharge the only result. External hemorrhoids and loose cutaneous anal folds. The finger detects, *about three inches* above external sphincter, an *annular constriction* of the rectum, calibre No. 26 (French) urethral

bougie. The stricture has a firm, fibrous feel, the tissues in the vicinity quickly shading off to normal resistance; no irregular, nodular, stony induration to be detected. Sims's speculum not introduced, because of the resistance and pain produced by the examining finger.

July 23. Removed the hemorrhoids and loose anal folds. Placed her upon hydrarg. protiodid. gr. $\frac{1}{2}$ morn and eve; ordered her into the country to recruit her strength for the operation of linear rectotomy, which I advised, she and her husband accepted, both having declined gradual dilatation, by no means strenuously recommended. To cease the use of stimulants.

Sept. 10. Just returned from the country with bowel trouble increased. To take quinia sulph. gr. ij. in pil., after each meal, a substitute for the above pills.

*Dec. 2.*¹ Dr. James R. Wood examined patient to-day, confirmed my diagnosis, and recommended the proposed treatment. At his suggestion placed her upon potassium iodide gr. x. thrice daily, as a specific tonic. On the 4th inst. was obliged to discontinue iodide on account of nausea and diarrhœa; substituted quinia sulph. \mathfrak{D} ij, hydrarg. protiodid. gr. viij, ext. nucis vom. gr. x. M. f. pil. xl. Sig. one after each meal. On same day passed No. 28 (French) urethral bougie through the stricture, retained twenty minutes; on the 13th, No. 28, then No. 30; on the 20th, No. 30, then No. 2 English rectal bougie; 27th, No. 3; 31st, No. 3, followed by No. 4, the latter causing intense pain; at every sitting instruments retained five minutes each, causing considerable pain. Great improvement as regards tenesmus and discharge since using the bougies.

Operation.—*Jan. 2, 1876.* Patient thoroughly inebriated by brandy, former experience having taught me that complete anaesthetization could not be induced by other unaided. Assisted by Drs. J. S. Fitzgerald, N. S. Westcott, B. C. Melutyre, and G. A. Evans. Digital examination of the uterus and appendages found nothing abnormal. With difficulty carried my index finger through the stricture; found mucous membrane above roughened and thickened, but slight amount of ulceration. Blood followed the withdrawal of the finger. Ruptured external sphincter, a small rent in the anal mucous membrane occurring. Sims's largest speculum showed beautifully the location of the contraction, with its shining, fibrous appearance. Dr. F.'s finger being in the *fornix vaginæ*, I passed a probe-pointed bistoury partially through the stricture, when the speculum became displaced, and was obliged to withdraw the knife. A second attempt failed for the same reason; I had the speculum withdrawn. With my left index as a guide, I passed the knife completely above the contraction, and by three sweeps cut completely through the tissues anteriorly; they creaked under the knife like cartilage. Considerable hemorrhage followed; incision carried to a depth of about three-quarters of an inch. Reintroduced the speculum, brought the posterior part of the stricture fully to view, and divided with a scalpel *all the coats of the gut*, even through the post-rectal cellular tissue, to the length of two or more inches in the *median line*, the tissues grating as before. Increased hemorrhage; removed speculum, passed index, found quite a little band at the most superior margin of the once strictured gut, which I freed by the knife; still above this another slender band, which I tore with my finger. Hemorrhage very free; filled rectum with ice, and in five

¹ An examination of her urine on November 24th showed normal amount, colour, reaction, etc., sp. gr. 1025, negative to tests for albumen and sugar.

minutes all flow had ceased. Soon after gave an enema, which washed away blood, feces, etc.; then anointed the cut surfaces with carbolized oil (1:10), and introduced the wire rectal plug, smeared with the same substance. Operation lasted about fifty minutes.

4.30 P. M. (three hours after operation). Pulse 112, full, soft; temp. 99.5° F. Has vomited.

9.30 P. M. Pulse 120, small; temp. 103.6° F.; respirations 28, regular. Has vomited and retched much. *Thirst extreme*, but water and ice immediately rejected. Complains of some rectal pain.

11.10 P. M. Hypodermic gr. $\frac{1}{2}$ morphia. 12 M. Sleeping.

3d. 8 A. M. Slept some; awakened by thirst, which was terrible, and only controlled by moistening the lips every few minutes. Rectal plug removed at 2 A. M. on account of tenesmus and heat about the parts. No hemorrhage had occurred. Little or no pain. Pulse 132, small, soft, regular; temperature 101° F.; respirations 14. Has retained two teaspoonfuls of beef-essence this morn.

9 o'clock. Washed out bowel with sol. potassæ permang. (gr. x ad Oj), which brought away a few coagula and feculent-smelling, dark liquid. Anus swollen and tender. Unable to urinate since the operation; just drew off 15iv normal urine. R. Quiniæ bisulph. gr. ijss, tr. digitalis $\mathfrak{m}\text{ij}$, liq. morph. sulph. (Magendie) $\mathfrak{m}\text{iv}$, in haust. tert. hor. sumend. Cold beef-essence equally often. Ice *ad libitum*. Liq. morph. (Mag.) gtt. x as often as required for pain.

9 P. M. At 1 o'clock pulse 120; temp. 104.2° F.; respiration 14:16, regular. About the same hour passed nearly a pint of darkish urine; rectum syringed out as in morning, bringing away a little normal feces. Mixture causes nausea. Thirst abating. Perspires freely. Slight tenderness and pain in hypogastrium. Temp. 102.8° F.

10th. Nausea and vomiting occasionally till the 4th inst., then ceased. Eve of the same day menses appeared, ceased the afternoon of the 6th inst.; preceding and during the flow moderate hypogastric pain and tenderness. Natural, formed stool caused by enema the 5th inst., and daily since. Till that date enemata invariably caused vomiting and retching. Morphia each night has caused sleep in naps. Beef-essence, milk, and two milk punches daily have been the diet; gr. x Hawley's pepsine with each meal (taken about every three hours). Morphia for pain and sleep, from gr. ss; jss daily. Commenced taking the 7th inst., R. Hydrarg. protiodid. gr. x; quiniæ sulph. 5ss; pulv. opii gr. viij; ext. gent. q. s. f. pil. xxx. Sig. one three daily. On the 8th digital examination revealed full calibre of bowel, no hardness posteriorly (great tenderness, however), incision gaping; anteriorly, callous edges of gaping incision.

To-day introduced bag No. 3 of Molesworth's dilator, filled to circumference of 3 $\frac{1}{2}$ inches, retained five minutes; caused much pain and tenesmus. Vomited and retched during retention. Dysuria; buchu and beladonna therefor. Mucous discharge from rectum.

11th. For first time a spontaneous natural, consistent stool: much pain. Solut. potassæ chlorat. (3ij ad Oj), instead of permang. solution, in future, after each stool or at least once daily.

12th. Dilator No. 4, to circumference of 5 inches, retained two minutes; pain intense; vomiting, and tremor of muscles of whole body.

17th. Daily stool by aid of aperient pill at bedtime. Dilator No. 4, to circumference of 5 $\frac{1}{8}$ inches, retained ten minutes; vomited; less pain. On 18th began sitting up in chair two or three or more hours daily. In

addition to pills to take gr. ij quinine bisulph. thrice daily. Anal fissure troublesome; apply R. Hydrarg. protiodid. gr. x; unguent. belladon. ʒj. M. Sig.—Thrice daily.

22d. Began upon solid food the 13th. Quinia discontinued 20th inst.; caused nausea. To-day dilator No. 4, to circumference 5½ inches, retained fifteen minutes. Operation still less painful. No vomiting, no retching.

Feb. 2. Resumed solid meals on the 28th ult. Morphia discontinued. To-day dilator No. 4, to 1 inches, leakage by side of piston; retained fifteen minutes. 5th inst. Anal fissure healed. Walked a block to-day.

8th. *Digital Examination.*—*Anteriorly*: A little induration on either side of the incision, extending laterally about half an inch, more diffused than sharply defined; perfect patency of the incision. Natural feel above and below old seat of stricture. *Posteriorly*: Deep sulcus of more than two inches in length; tissues thrown forward in folds as though tied back along the centre by a cord; tissues thickened from a point above internal sphincter as far as the finger can reach. *No traces of former contraction.* Tenderness considerable along the sulcus and its immediate vicinity. Whole canal perfectly patent.

15th. Discontinued mercury—quinia pills two days ago. To-day dilator No. 4, to 5¼ inches, retained ten minutes. Quinia for appetite. Discontinue chlorate enemata, but for a couple of weeks hence use salted enema after each stool.

May 9. A slight bloody discharge for a day and a half followed the last use of dilator. On March 7th used dilator, to 5½ inches, retained eight minutes; great pain. About April 10th a specific tuberculous eruption over right patella, with irregularly-diffuse subcutaneous gummatus swellings along the inner aspect of the same thigh, extending from the knee upward for about three inches, declared itself. General health greatly improved. Put her upon potassium iodide (gr. xv), and mercury protochloride (gr. ¼) thrice daily. Had, usually, one or more daily stools. Was obliged to discontinue the above remedies because they caused considerable enteric disturbance. Has been annoyed ever since by frequent involuntary discharges of yellowish-brown (feculent) fluid; slight mucopurulent discharge still continues. *Has had no tenesmus since the operation*; bowels move their contents by two or three successive stools at one or two hours' interval.

Digital Examination.—Under ether: Anterior incision healed; a firm cicatrix and a little surrounding induration alone to be detected. Little or no deposit in the recto-vaginal space. Posterior cicatrix hard; the lateral remains of the old stricture very much softened.

Per Speculum.—Large Sims's speculum passes with ease. Anteriorly there is a healthy cicatrix; at the upper limit of the incision a minute eroded spot. Tissues otherwise apparently healthy. Slight erosion and an exuberant granulation at the upper limit of the incision posteriorly. *No apparent tendency to recontraction.* External sphincter has partially regained its power. Introduced dilator No. 4, to 5½ inches, retained half an hour. Digital examination, after removal of water-bag, found the mucous membrane, and underlying tissues, about the old contraction, softened. To apply, by inunction, hydrarg. oleat. (6 per cent.) gtt. xx, morning and evening. R. Iodoformi, ʒij; acid. tannic. ʒj; pulv. ipecac. ʒj; pulv. opii gr. x; ol. theobrom., q. s.; f. supposit. xij. Sig.—One daily, after a stool and washing out rectum by salted enema.

July 9. Had been on potassium iodide (gr. x) and hydrarg. protochloride (gr. $\frac{1}{3}$), thrice daily, till the 2d inst., for the knee-thigh eruption, which had rapidly increased in extent and severity after the last use of the dilator, when I substituted starch iodide (one teaspoonful, in milk, after breakfast and tea) for the potassium salt. Two or three daily natural, but partial, evacuations, due to want of tone in the bowel, to fully and at once expel its contents. The eruption is much improved at present, and still fading away. The starch does not affect the bowels unfavourably, as did the potassium preparation. General health better than for years.

Aug. 11, 1877. Has been under treatment since last report more or less constantly for the knee eruption. She has taken the iodide of starch (1 : 2 teaspoonfuls twice daily); protiodide or protochloride pills; used protiodide of mercury and oxide of zinc ointments for the knee, which has fluctuated between better and worse due to irregularity in treatment, indulgence in alcohol, and general neglect. Whenever the starch iodide was taken regularly for a month or six weeks the knee eruption was pronouncedly improved; in fact, in Aug. 1876 it was almost gone; neglect and abuse of the system caused a rapid return. Last December saw the last of her rectal discharge, since when her stools have been of natural consistence and but one or two daily, except when green fruit has been eaten—not seldom the case. Constipation has occasionally needed an aperient. *No tenesmus till within six weeks, very slight.* General health has been most excellent—since January has weighed more than ever before. In spite of my advice (dating back to last October) she has refused to grant a digital examination till now.

Digital examination, under ether, reveals recontraction; antero-posterior diameter equal to about an inch, perhaps an inch and a quarter—a large sized thumb may be passed easily. Recontraction greater anteriorly and laterally than posteriorly. Edges hard, but smooth; *not as hard as before the operation*, however. The tissues lying immediately adjacent to the annular ring are perfectly soft and natural. No ulceration. Introduced dilator No. 3 and filled to a circumference of $3\frac{1}{2}$ inches only, due to leakage behind the piston; however, I had only intended to dilate to $1\frac{1}{2}$ inches circumference, inasmuch as, the patient being anæsthetized, I had no guide to the proper amount of *tolerable distension*. I also calculated on a repetition of the dilatation at the end of a week, again and again if necessary, and wished to be over-careful at first. Retained the dilator half an hour. Afterward found the tissues much softer to the touch, and the canal uniformly dilated to the proportionate diameter. The knee is steadily improving under potassium iodide (5ij : 5ij in 24 hours), which has been given lately for a severe attack of trigeminal neuralgia, lasting now more or less constantly for six weeks.

Sept. 18.—The usual remedies have been “pushed” in vain, but quinia, in gr. xv doses thrice daily (per rectum, on account of irritable stomach), has conquered this severe attack of neuralgia. The knee is looking better than for a year past; induration greatly diminished, natural colour supplanting the blue and copper-coloured skin. General health impaired by this long-continued attack of neuralgia. Dilatation still declined. My connection with this case ceased about the first of November following. Despite all remonstrance, I could not obtain another physical examination or the patient’s consent to following up local treatment.

REMARKS. *Etiology.*—On account of the high situation of the stricture and the absence of involvement of the anus or rectum below the an-

nular constriction, the cause would seem to have been *direct contact* of the specific virus. The absence of vulvo-vaginal cicatrices goes to show the leucorrhœa as non-chancroidal. Unlike the numerous cases of "venereal," more properly chancroidal, stricture, where the sequel to the ulcerative process is contraction of the anus and the immediate superadjacent rectum, in this case we have it high up and the tissues below of normal calibre and resistance. It is *specific* in its character, as the precedents of a simple form are wanting; cancer is negatived by all the signs; the character of the existing syphilitic symptoms points to but one probable cause.

Treatment.—All surgeons agree upon the danger of gradual dilatation. Undoubtedly this danger becomes greater as the size of the instrument increases. The bowel, in and about the constriction, being in an unnaturally friable condition, a certain degree of dilatation can be tolerated; but, carried beyond this point, the tissues easily give way, the rupture of the bowel ending fatally. This unfortunate result has not been due to bad manipulation, but to the pathological condition of the gut itself. The preparatory dilatation pursued in this case was carried simply to the extent of allowing the finger to examine the bowel just above the seat of stricture. Had this treatment been followed up to No. 10 or 12 English rectal bougie, there would have been great danger of rupture. Were dilatation carried *carefully* and *gradually* to a *certain point*—variable in different cases according to the *nature* and *degree* of the constriction—treatment by bougies would be comparatively safe. But the degree of dilatation must necessarily be very limited, the benefit derived merely reciprocal, *prospect of cure altogether out of the question*. Antagonistic to the resorption of the adventitious material, which, to a certain degree, obtains in all well-treated urethral strictures, stands the fact that frequent use of instruments *here* produces resiliency and irritability; after forced decrease in size, there comes a time when local treatment must be laid aside and the sufferer's sole relief lies in lumbar colotomy.

Notching the constriction in two or more places, followed by gradual (or forcible) dilatation (recommended by many high authorities), is even more dangerous than the simple use of bougies. Dangers like fatal shock, rupture of gut through its peritoneal investment, formation of abscesses which may burst into the peritoneum, septicæmia, etc., stare the patient in the face after such procedure. With very few dissenting voices, present authorities declare the immeasurable superiority of incision over rupture in urethral stricture, both as regards danger, tendency to recontraction, etc.¹

The law which governs the pathology of stricture, wherever found, is

¹ I am aware of the statistical summary, gleaned from University College Hospital (of London) Reports, contained in the *Lancet*, June 23, 1877.

the same for all parts of the body; and it is not strange that the same treatment should be equally applicable in one site as in another.

In addition to the authorities quoted by Dr. F. D. Lente in his article in this Journal for July 1873, Hamilton¹ especially warns against forcible dilatation *or incision* "in syphilitic cases, particularly when there is a nodular feel;" Henry Lee² also speaks of forcible dilatation deprecatingly; Spence³ only countenances simple dilatation; Bryant⁴ says, "Forcible dilatation is inadmissible," his treatment being simple dilatation as long as it may avail, then lumbar colotomy. The leading surgical authorities condemn division. Henry Smith⁵ and Verneuil⁶ alone undertaking the deeper incisions before Dr. Whitehead's⁷ case of *complete* division.

Syme, Velpeau, Nélaton, Bushe, Birkett, Henry Lee, Gross, Van Buren, Hamilton, Allingham, and Bryant condemn forcible dilatation and everything more heroic (?) than simple "nicks," followed by *gentle* dilatation! But rectal surgery is advancing. It may be here remarked, before proceeding to the examination of the claims of antero-posterior linear rectotomy, that *electrolysis* has proven as complete a failure in rectal as in urethral stricture.⁸

In the following table, complete incision, and forcible and simple dilatation, are compared:—

<i>Complete Incision.</i>	<i>Division.</i>	<i>Simple Dilatation.</i>
1. Complete and clean division; enlargement of gut to normal calibre; wound limited by the operator's will.	1. Rents in the gut cannot be limited.	1. Full calibre of the gut cannot be restored, except in cases of slight contraction.
2. Rupture (preferable) or division of the external sphincter and gives complete drainage, lessening danger of septicaemia, pyæmia, abscess, and fistula.	2. Bruising of the tissues endangers sloughing; absence of widely-gaping and cleanly-cut surfaces tends to the dangers here enumerated.	
3. No danger of wounding the peritoneum.	3. Great danger.	3. Danger of rupture, fatal or serious.

¹ Prin. and Pract. Surgery, New York, 1872.

² Lectures on Practical Pathology and Surgery, Lond., 1870.

³ Lectures on Surgery, Edinburgh, 1863-1871.

⁴ Practice of Surgery, Phila., 1873.

⁵ Diseases of the Rectum, 3d Lond. edition, 1871, case p. 49 et seq.

⁶ Gazette Méd. de Paris, Jan. 1873.

⁷ Amer. Jour. Med. Sci., Jan. 1871.

⁸ See case in Amer. Journ. Med. Sci., July, 1872, p. 118.

<i>Complete Incision.</i>	<i>Division.</i>	<i>Simple Dilatation.</i>
4. Non-requirement of dilating instruments till shock of operation and danger of secondary inflammations have passed.	4. Danger of secondary inflammations, due to shock, tearing, and bruising of the tissues.	
5. Even then <i>no dilatation</i> , but <i>simple maintenance</i> of the enlarged calibre by the water-bag dilator used at long intervals.	5. Dilatation must be continued after the "nicks" and rupture, as maintenance of the enlarged calibre can only be attained by almost constant use of the dilator, due to	5. Same objection obtains as in <i>Division</i> .
6. Tendency to recontraction showing itself, simple use of the bag <i>as a repressor</i> ; and, in cases of neglect, as a gentle dilator. Irritability and resiliency do not follow the operation.	6. Great tendency to rapid recontraction and resiliency.	6. Same objection obtains as in <i>Division</i> .

What are the objections which may be urged against thorough division? Danger from hemorrhage, infiltration, shock, blood-poisoning, and peritonitis. Division in the *median line* precludes any serious hemorrhage from the *anatomical* distribution of the arteries and large veins. Experience in all thus far reported cases practically proves this a fact *even in pathological conditions of the gut*. In no case has infiltration occurred; nor is it likely, since frequent antiseptic washings of the surfaces must tend to prevent it. Shock is no greater than, in many cases, follows simple dilatation, or any operation of moment; ether greatly modifies its effects. Septicæmia is yet to be encountered; theoretically it must be a great rarity, since such complete drainage exists, and almost constant cleanliness of the wounds can be maintained by enemata.

Peritonitis was not developed in Dr. Lente's or Dr. Whitehead's, or in my case, although the menues appeared the second day after operation in the latter. Unless wounded or opened during the operation, we should only fear a circumscribed form, at worst, which, in the majority of cases, the opium treatment could promptly overcome. There should be no greater danger, in this respect, than from cutting-operations upon the *cervix* and *os internum uteri*; and no one can question the necessity for these in appropriate cases.

Rupture of the external sphincter is much preferable to division, for so slight a wound as a fissure in this case gave rise to much pain and annoyance. Drainage is just as good, inasmuch as the secretions find a ready

outlet: it has the further advantage of *painlessly* allowing the passage of the dilator without the aid of the speculum.

Operating with the finger as a guide is much superior to the speculum, especially anteriorly. In one case the *feel* of the tissues as they give way is much more reliable than *sight*, which can only appreciate the required depth from a preconceived notion in this regard. With the assistant's finger in the vagina, and the operator's index appreciating the manner in which the tissues are giving way under the knife, the recto-vaginal space shall not be opened or the peritoneum wounded, thus making the anterior incision as safe (in careful hands) as the posterior. M. A. Muren, in the *Gazette Médicale de Paris*, Jan. 4, 1873,¹ says: "One sees that the peritoneal *cul-de-sac* descends very far anteriorly, 4 or 5 centimetres [about $1\frac{1}{2}$ or 2 inches] from the anus in women, 5 or 6 [about 2 or $2\frac{1}{2}$ inches] in men: whilst behind it is found much higher, located as high as 12 or 14 centimetres [about $4\frac{2}{3}$ or $5\frac{1}{2}$ inches]." The anatomical conformation in women allows the anterior incision when the provision against too deep cutting, as above set forth, is acted upon. But what course should be pursued in males? Being unable to use an assistant's finger, as was done in the vagina of women, in cases where the stricture is located at or above two inches from the anus, the anterior incision is dangerous and should not be undertaken (unless in some exceptional case, which I admit might warrant the procedure), since there is great danger of wounding the peritoneum (to say naught of the bladder, vesicular seminales, prostate, etc.), and there is no such chance for drainage of the peritoneal *cul-de-sac* and triangular space as in the female. Strictures at or below one and a half inches can admit of the procedure, but usually the posterior incision should suffice. Dr. Lente² judiciously answers this question: "In cases of males, the posterior operation would probably be, as a general rule, all that is necessary or, perhaps, safe." The posterior incision can scarcely be too deep or free, since the object is to prevent infiltration, and, at the same time, to give full size to the gut after the healing process has ended. Packing the rectum with ice quickly controlled the hemorrhage; and is far speedier in its result than the passage of the bell-shaped sponge, so highly recommended. Dr. Lente proved attempts to tie the divided vessels uncalled for, even a disadvantage. That no large vessels were likely to be cut led me to believe ice would be the speediest and most certain hemostatic. The wire-plug, described by Dr. Lente, is an absolute necessity, being a certain index to renewed hemorrhage; it should never be dispensed with. Washing out the bowel sufficiently often to remove all accumulating matter is one great element of success in the after-treatment. Thorough washing after each stool must be pursued, and for the first week at least two (better

¹ Amer. Journ. Med. Sci., April, 1873, p. 549.

² Ibid., July, 1873, p. 39.

three) enemata daily are necessary, as were given in this case. At each washing a sufficient number of injections should be made till the water comes away comparatively clear; one small enema can never answer, usually three or four in succession are required. The absence of continued high temperature is worthy of remark. Suddenly developed and continued high temperature should be a reliable sign of some complication, it may be assumed from past observation.

I think the dilator, in my case, was used sooner than was necessary, although not practically introduced till the ninth day after the operation, so small was the circumference given it the seventh day. Were I again to operate I would not introduce the bag sooner than the fourteenth day. Until this time at least, the parts are inflamed and swollen, thorough repair by granulation has only *commenced*, no good can be accomplished by pressure before this period. Since no contraction can take place till after there is well-established granulation and cicatrization, there is no need for the instrument; and why meddle with the parts prematurely? A slight curve should be given the bag, to correspond to the sacral curve; the *point* kept against the left side of the gut, to avoid either wound, and pushed at least an inch above the former stricture. The required amount of water is to be thrown in gradually, *never rapidly*. When no ether is administered, ten, at most fifteen, minutes is long enough for its retention after proper circumference has been obtained, as nothing is to be gained by longer retention; under ether, half an hour at longest may be allowed. Anything which tends to irritate is pernicious; short-continued pressure gives increased circulation and tone to the parts, whereby the resorption of the old exudation takes place; but if that pressure be continued too long (one or two hours) the reaction is excessive, instead of increased vitality there come congestion and irritation in the widest sense. The best authorities on urethral stricture warn against aught but the shortest retention of dilating instruments, except in "continuous dilatation," where the contraction is made to yield by a process of ulceration; *but that the tendency to recontraction is always greater than after simple dilatation* is unanimously conceded. Unlike the period of retention, the interval between the introductions should be long. Of course it is impossible to specify time, frequent digital examination is the best guide; on the appearance of increasing hardness or recontraction, dilate.

My patient not only complained of pressure and bearing down, but "it seems as though it is about to tear my insides into pieces" when the dilator was *in situ*. Its retention always gave rise to considerable suffering, though partly from acquired "nervousness." The non-administration of ether during dilatation is an immense advantage; the patient's feeling being a reliable guide to the amount of dilatation as well as length of retention. *Dilatation to the point of maximum tolerance, retention till the pressure becomes absolutely unbearable*, will safely and satisfactorily lead the surgeon.

When the patient is hysterical or unreasonably "nervous" ether becomes a necessity; but whenever possible it should be avoided.

Attention is now invited to some of the sequelæ of the operation. The neuro-muscular peristaltic power is greatly impaired from distension of the gut above the stricture, incomplete emptying, and long-continued and frequent straining; consequently we could not expect immediate return to normal power after the removal of the obstruction, and the fact stands that two or three stools daily are necessary for the complete evacuation of the large intestine. This, however, does not in the least detract from the merits of the operation, inasmuch as time and peristaltic tonics (strychnia, atropia, physostigma) can, to a great degree, remedy this. The importance of daily evacuation of the bowel, and the injurious effects of constipation, cannot be overrated. Cathartics should be shunned; only aperient peristaltics should be used.

The muco-purulent discharge, lasting about five months, was due to the slow return of the mucous membrane, in and about the cicatrices and old induration, to normal function. The subsequent watery (mixed with mucus and feculent matter) discharge was due to the lack of vaso-motor tone. Had mine been a prudent, self-interested patient, undoubtedly this long-continued discharge might have been removed in a few months by care and vaso-motor tonics. In my case "bearing-down" ceased with the operation, and did not return till *fourteen months* after the previous introduction of the dilator, then only to a slight degree! Great improvement in the general health followed the operation in spite of two poisons, alcohol and syphilis. The decided superiority of starch iodide over the potassic salt is worthy of note. Had it been taken regularly, proper attention to health been observed after August, 1876 (when nearly every secundo-tertiary manifestation had disappeared), and alcohol been eschewed, I doubt not the long history of sequelæ might have been absent. In April, 1876, when the general health was excellent and the rectal function, in the one essential respect, was normal, the systemic poison began to show greater activity and continued to assert itself, in one way or another, thereafter. Some might incline to the *post hoc, propter hoc* reasoning; with such I disagree. Why? The eruption was present when first I saw her; mercurials improved it for awhile (see July 23d, 1875); the constitutional poison steadily acted (aided by alcohol) in spite of country air, etc., localizing itself, however, in the rectum, in the face of specific treatment (see Sept. 10th, 1875, till Dec. 1875); bougies, however, lessened its local activity, till the operation, by relieving local irritation, and the withdrawal of alcohol, held it in abeyance for months; finally it broke forth anew, but in a more superficial form.

This is simply an exemplification of the course of syphilis in many cases; the suppression of manifestations being due to either specific treatment or improved general health. The case under consideration, relieved

of a prolonged irritation and drain upon the system, I think, comes under the second category. Although the blood-poison began its attack in April, 1876, and continued thereafter, the bowel affection was improving all the while and continued improved for many months, despite neglect, abuse, and two poisons! Unfortunately, the precise time of commencing recontraction, and its course, could not be physically ascertained; its inception could not have been earlier than a few months subsequent to May, 1876, since in *fifteen months* (May, 1876, to Aug. 1877) the recontraction had only amounted to one-half of the original calibre. A different result could, I think, have been recorded had my patient been tractable and far-sighted, submitting to the use of the dilator at intervals varying to the necessity for preserving the full calibre of the gut. It would be a great triumph of surgery could the full calibre be preserved by the use of the water-bag once a month. I doubt not the intervals might be prolonged to two months, perhaps three, under such circumstances as might have obtained, judging from the condition presented in May, 1876, after a lapse of sixty-three days.

More or less precise directions for differential diagnosis of various forms of rectal constriction exist; but men of great experience and acumen mistake the benign for the cancerous affection, proving how difficult it is in some cases to distinguish one from the other. *Undoubtedly the cancerous element is present from the beginning*, if at all, and as this operation would seem to promise equal prolongation of life, as lumbar colotomy in certain of these cases, we should have some guiding landmarks in their selection. No precedent exists for believing the removal of irritation in this locality (rectum) can dissipate disease of a malignant character, all cases of cancer having died a short time following lumbar colotomy. The selection of proper cases in general has as much bearing upon success as the operation itself; the following indications may be worthy of attention.

Antero-posterior linear rectotomy is indicated in cases of simple cicatricial or fibrous, syphilitic or chancreoidal contraction, of calibre No. 4, English rectal bougie, or less, located at or above two, *not more than four*, inches from anus, ulceration or no, *occurring in females*.

When near or involving the anus, the posterior incision should be carried from the highest point of the stricture through all the tissues below, as in *fistula in ano*.

Simple posterior linear rectotomy is indicated when the above conditions obtain *in males*, and in cancerous strictures, of whatever calibre, when the pain, effects on general health or impaired defecation (diarrhoea or constipation), warrant it, non-ulcerative or slightly so, at or below four inches from anus, *tissues above not becoming involved*.

In cancerous stricture this operation is far superior to lumbar colotomy, inasmuch as it coequally prolongs life without the inconveniences and loathsomeness of an artificial anus, and *the danger is no greater*. Where

there is cancer with extensive ulceration, breaking down of tissues and spreading disease, lumbar colotomy is the only resort. Rectotomy, in either form, should be *the* resort in all cases, with the *one* exception, however slight the contraction. Internal urethrotomy is eminently successful in "penile" strictures, bougies are simply an annoyance. The present well-established rule, "cut all *penile* strictures," is equally applicable to rectal constrictions of whatever calibre.

There shall probably come a time when a just appreciation of the merits of this operation will lead the surgeon to perform it much earlier in the course of the disease than has heretofore been done. Like ovariectomy and gastro-hysterotomy, it will not be accepted as the *dernier ressort*, but undertaken before the system has broken down under untold pain and suffering.

225 WEST 10TH STREET, NEW YORK, January 22d, 1878.

ARTICLE IX.

SUPRA-PUBIC LITHOTOMY. By C. W. DULLES, M.D., of Philadelphia.
WITH A TABLE OF OPERATIONS BY THIS METHOD DURING THE LAST TEN YEARS, AND A REPORT OF A CASE BY GEO. W. RACHEL, M.D., of New York.

MORE than a hundred and fifty years ago, Cheselden, convinced by the demonstration of John Douglas that it was practicable to remove vesical calculi by incision above the pubes, adopted this method, and carried it out so happily that he lost only one of ten patients, and that one solely from his own extreme indiscretion. His great success, however, excited against him the jealousy and bitter animosity of Douglas, who persecuted him on account of this operation, accusing him of stealing credit which belonged rightly to another. At the same time, so rude was the surgery of that day, that other men, attempting this method, cut the peritoneum, and actually burst the bladder when they meant simply to distend it; which occurrences led Cheselden to leave off what he had so well begun, and go in search of some other way. This resulted in his applying his great skill to the perfecting of the method of Rau, converting it into that so universally known and practised as Cheselden's, or the lateral operation. Yet, for all this, he was not so much influenced by the sudden tide of alarm which had risen from the accidents alluded to, as to be blinded to the many advantages of the high or supra-pubic operation. In giving his reasons for leaving it, he says:¹ "Though this operation came into

¹ William Cheselden: The Anatomy of the Human Body. 8vo. London, 1740. 5th ed.

universal discredit, I must declare it my opinion, that it is much better than the old way, to which they all returned, except myself, who would not have left the high operation, but for the hopes I had of a better, being well assured that it might hereafter be practised with greater success."

That the time he anticipated is now at hand seems to be indicated by the growing interest which is being taken in supra-pubic lithotomy, the modification of former judgments in the presence of larger information, the willingness to make due allowance for accidents which have been utterly foreign to the method, and the recognition of the fact that it presents advantages which cannot be fully appreciated until they are tested on reasonably favourable subjects, and not confined almost exclusively to the most hopeless.

Some evidence of this may, I think, be gathered from the history of and the remarks suggested by the following case, which was kindly furnished me by Dr. Geo. W. Rachel, of New York, in response to a request for such information contained in previous articles upon this subject, and which I would now renew :—

Henry W., aged 4 years, of average development, was first examined by Dr. Rachel, Nov. 21st, 1875. He had been suffering from symptoms of stone in the bladder for a year and a half. His general condition was very poor; temperature, $101\frac{1}{2}^{\circ}$ (Fahr.); his pulse, 100, and very feeble; he had chronic bronchitis; his urine contained blood, pus, and epithelium from the pelvis of the kidneys and the bladder, as well as eight or ten per cent. of albumen. His hands and feet had been for a few weeks a little swelled.

Having discovered a calculus, apparently of considerable size, it was determined to attempt to relieve the child by lithotomy. This seemed to offer the only chance of prolonging his life, though undertaken with a full appreciation of the fact that the prospect of a successful issue was very slight. Owing to the consideration of the dangers of perineal lithotomy, and the advantages of the supra-pubic method, as well as the favourable opinion of the latter expressed by a number of German surgeons, Dr. Rachel selected this, and, with the assistance of Drs. Lilienthal and Guden, carried it out on Dec. 7th, 1875.

Following the recommendation of Roser, instead of an injection, he availed himself of the urine accumulated during a number of hours immediately preceding the operation, and which distended the bladder up to the umbilicus. An incision was made from half an inch below the umbilicus to the level of the symphysis pubis, exposing the linea alba, which was divided upon a director to an extent of about three inches. The tendons of the recti and the pyramidalis muscle were nicked to a depth of half an inch on each side, and hooked up with the fingers. The bladder was now easily cleaned of its fat, and its bluish-gray surface exposed, without meeting the peritoneum at all. It was then steadied with the second and third fingers of the left hand, and incised quickly from above downward. Instantly the index of the left hand followed the knife into the opening, a little urine escaped, while the stone was whirled up by the current, and caught upon the finger of the operator. The incision being too small to pass both the finger and the stone, it was enlarged some-

what by cutting directly upon the latter, which then slipped easily out : the ease and rapidity of the whole proceeding being a source of astonishment and delight to Dr. Rachel and his assistants. The bleeding encountered was insignificant.

Careful search disclosing no other calculi, the bladder was held up by the edges of wound, and its contents drawn off per urethram with a catheter. In the whole operation not more than one ounce of urine escaped through the wound. This was now cleaned with sponges soaked in a one per cent. solution of carbolic acid, and closed—excepting about a third of an inch at the lower end—with five silver wire sutures, which were made to include both the bladder and abdominal walls. The whole was covered with a piece of lint, soaked in a five per cent. solution of carbolic acid.

The same evening the boy's temperature rose to $102\frac{1}{2}^{\circ}$, and his pulse to 111. He complained of much pain, and was given opium. The morning after the operation his temperature was $103\frac{1}{2}^{\circ}$, his pulse 124; by evening the former was $105\frac{3}{4}^{\circ}$, the latter 150. He was placed in a semi-recumbent position to be changed to the side occasionally, and ordered to be put in a warm bath twice daily. The second morning his temperature was $102\frac{1}{4}^{\circ}$, his pulse 110; in the evening they were 103° and 120. The third morning they were $102\frac{1}{4}^{\circ}$ and 116, and in the evening $101\frac{1}{4}^{\circ}$ and 108.

During all this time his urine had flowed almost entirely through the urethra; he ate well, was cheerful, and seemed to be getting along nicely. Yet on examination of this last day's urine, it was found, after filtering, to contain twenty-five per cent. of albumen.

The fourth morning his temperature was $100\frac{1}{2}^{\circ}$, his pulse down to 90. All the sutures but the lowest were now removed. During the day the flow of urine per urethram ceased entirely, and an injection of the bladder with warm water was made through a catheter. This "removed some plugs of mucus and secretion from the wound." In the evening his temperature was up again to 103° , and his pulse 128. Later in the night he had much fever, with coughing and some dyspnoea. There was dulness over and below the right scapula, both respiratory sounds were very much roughened, and dry and moist râles abundant, the latter more especially on the left side. The wound now for the first time looked badly, and from this he grew steadily worse, becoming delirious, and never regaining consciousness. The next morning his temperature was $102\frac{1}{2}^{\circ}$; his pulse, 120; his respirations, 42. The last suture was now removed. The wound was slightly reddened and gaped. In the evening his temperature was $103\frac{1}{2}^{\circ}$; his pulse, 130; his respirations, 53. At 11 P. M., he vomited what his parents called dark, bloody matters. Meteorismus now set in, with fetid diarrhoeal discharges. The next day—the sixth after the operation—his morning temperature was $105\frac{1}{2}^{\circ}$, his pulse 150, his respirations irregular; during the day he vomited a great deal of yellowish and greenish mucus; "his pneumonia speedily grew into an œdema pulmonum." His evening temperature was $104\frac{3}{4}^{\circ}$, with irregular respiration and an uncountable pulse. At 11 o'clock the following morning, just seven days after the operation, he died.

No autopsy was permitted; but Dr. Rachel and Dr. Guden, on inspection, judged there was "little ground for suspicion of infiltration of urine. The wound, however, was gaping much wider than three days before, and looked very unhealthy." Death, Dr. R. thinks, was "primarily due to pneumonia; but the vomiting, the meteorismus, the fetid discharges, and

the low, muttering delirium point to a process of blood-poisoning which, in the absence of an autopsy, remains somewhat of a mystery."

Subsequent examination showed the calculus to consist of a nucleus of urates, surrounded with alternating layers of oxalates, carbonates, and phosphates. Its weight was 5ij, and its diameters one and one-quarter inch, one inch, and three-quarters of an inch.

The issue of this interesting case cannot surprise us if we bear in mind the condition in which the little patient was before the operation. The evidences of advanced renal disease, complicated with pulmonary trouble, were certainly sufficient to justify the hesitation to institute surgical interference and the gloomy prognosis of Dr. Rachel. Yet the case deserves more than a passing notice; because in such unusual operations each one is likely to be taken as a representative of the entire class. And no matter how its advocates may deprecate this, it will avail nothing unless they specify the matters to which they take exception. For this reason I feel it proper to make some comments in regard to this operation, founded upon investigations which have now extended over four years, and embraced careful study of above five hundred cases.

The first of these comments relates to the means adopted to raise the bladder out of the pelvis. As I have already stated (*Am. Journal Med. Sciences*, July, 1877, p. 119), it is a mistake to suppose the bladder must be distended. This is clearly indicated by the history of the method, and I have repeatedly demonstrated on the cadaver the ease with which the entire operation can be done with no instruments but a knife, a tenaculum, and a catheter. A practical illustration of this was a case, reported to me by Dr. Thomas W. Deering, and published in the *Med. and Surg. Reporter* for April 29, 1876, in which he removed two calculi by the supra-pubic operation, having no assistant, and no instruments save those in an ordinary pocket-case.

Nevertheless, I believe, when it can be done, it is better to have the bladder distended, *but not with urine*. For it must be remembered that, though fresh, healthy urine is an innocuous fluid, that which is found in bladders containing calculi is not healthy; and to have it come pouring over the freshly-cut surfaces may introduce a needless element of danger. I am aware some German authorities admit the propriety of allowing the urine to accumulate and distend the bladder, in the manner practised by Dr. Rachel. Yet it seems to me better, in an operation like lithotomy, where so much may depend upon apparently minor details, and which is usually done on patients already in very poor condition, to observe every reasonable precaution, and eliminate every source of danger we can. For this reason I think the bladder should, before operating, be emptied of any accumulated urine, thoroughly washed out, and then carefully distended with some fluid.

The manner of washing out the bladder is important. Experience and

observation in the treatment of inflammations of the bladder have taught me it was a mistake, in my first paper on this subject,¹ to speak of using *a double catheter*. The proper way is to inject—with hydrostatic pressure if convenient—a small quantity of fluid through a simple catheter, and when the bladder resists pretty strongly let it flow away. Repeating this a number of times the whole of the interior of the viscus may be thoroughly cleansed. The fluid used may well contain some antiseptic, carbolic acid in one per cent. solution being perhaps the best,² and should *invariably be of the temperature of the interior of the body*, otherwise spasm may be excited, and the procedure made very difficult or impossible. When the bladder has been thus washed out, the same solution can be used to furnish distension for the operation; after which we may be pretty sure that the fluid which comes first into contact with the wound will be quite harmless.

There is no step in an operation of supra-pubic lithotomy of greater importance than the precaution of securing the bladder with a tenaculum before incising it. This was omitted in the case before us. Fortunately the movement of the calculus prevented the escape of the contained fluid, or the bladder would have collapsed, causing serious embarrassment in the subsequent steps. This actually occurred in a case recently reported to me.

In regard to the treatment of the wound, there has been some difference of practice among those who have done this operation in the past twenty-five years. Most surgeons have left it pretty much to itself. Günther, an ardent advocate for the method, who collated and published in 1851 the statistics of 260 cases,³ and who did eight operations without losing a single patient, simply applied cold, wet compresses, after putting a stitch in the upper part of the abdominal wound, if it was long. It is indubitable that very good results may be thus obtained, yet the most brilliant have been secured by carefully *closing the wound in the bladder* with sutures. This has been done by Lotzbeck and Bruns,⁴ with the result of union by first intention. It has also been done with complete success in this country: several times by Bell;⁵ once by Brady,⁶ with healing of the wound in eight days; once by Deering,⁷ with complete recovery in fourteen days; and once by Starr,⁸ with recovery in sixteen days.⁹ These re-

¹ Am. Journ. Med. Sci., July, 1875.

² Vide Schüller; Ueber die Localbehandlung des chronischen Blasenkatarrhs. Berlin, 1877.

³ Günther, Der hohe Steinschnitt, Leipzig, 1851.

⁴ Pitha und Billroth, Handbuch der Chirurgie, Bd. III., 2te Abth., s. 110.

⁵ Western Journ. of Med., Nov. 1867; and letters to the Author.

⁶ Detroit Rev. of Med. and Pharmacy, Sept. 1869.

⁷ Med. and Surg. Reporter, April 29, 1876.

⁸ Am. Journ. of Med. Sci., July, 1877.

⁹ In some of these cases the abdominal wound was also closed.

sults indicate, I think, that sewing up the bladder is of decided advantage. It should be done by itself, and not in common with the abdominal walls. The few cases where the latter plan has been adopted, with which I am familiar, confirm me in this opinion. The external wound may be partly closed; leaving an open space below for the ends of the bladder sutures, for drainage and for observation.

The subsequent treatment is quite simple. A light absorbent dressing should be applied, the strictest cleanliness observed, and the urine drawn off from the bladder at short intervals until the wound is consolidated. A catheter should by no means be left in the urethra. The literature of the operation leaves this beyond doubt. The making of a counter incision through the perineum, such as was used by Côme and Souberbielle, is utterly unwarranted by experience. Both these have been recommended, and practised, too, in former times, from a dread of urinary infiltration and peritonitis. Now, however, these dangers have been shown to be greatly over-rated and such proceedings, with a view to avoid them, to be worse than useless. In regard to this, Podrazki, who furnishes the article on Diseases of the Penis and Bladder, in Pitha and Billroth's *Handbuch der Chirurgie*, and who shows great familiarity with this subject, after expressing the same opinion as that just stated, says: "From all this, it is seen that, in general, the pretended danger of urinary infiltration can of itself alone furnish no contraindication at all to supra-pubic lithotomy." And again: "Though, further, it was insisted that in supra-pubic lithotomy the peritoneum was more imperilled than in any other method, yet this danger also was unreasonably exaggerated."¹

Returning to our case, we must notice the injection of the bladder on the fourth day—for the purpose of clearing the urethra—to the extent of forcing "some plugs of mucus and secretion from the wound." This is not without precedent; but, unless I am mistaken, it has been practised mainly by Günther, who, it must be remembered, did not close either bladder or abdominal wound. I do not think his example should be followed where either of these have been sewed up. In such cases, if the desired end could be attained without the employment of so great force, it would probably be safer for the patient.

Finally, I would call attention to the fact that Dr. Rachel writes me, that, notwithstanding the fatal termination of this case, it has strengthened his conviction that supra-pubic lithotomy is far preferable to that by perineal section. He quotes Bardeleben, who says (*Lehrbuch der Chirurgie*, Bd. IV, s. 215): "In children, up to the age of puberty, the supra-pubic method must be considered the very best for small as well as for large stones."

Podrazki says,² in his comparison of the various methods of lithotomy:—

¹ Op. cit., Bd. III., 2te Abth., seite 111.

² Op. cit., seite 126.

"All the objections which, in earlier times, it was believed could be raised against this method, experience has fully refuted."

Again:—

"Too great stress cannot be laid upon the importance of supra-pubic lithotomy for children."

And, further:—¹

"The mortality is certainly as yet greater after supra-pubic than after lateral lithotomy, which, however, may depend solely upon the fact that hitherto only the specially unfavourable cases have been subjected to supra-pubic lithotomy; and it is not to be doubted that, with the more frequent employment of this method, and the greater technical dexterity thereby attained, together with a rational selection of cases, the results will also become much more favourable."

Such is the expectation of every one who has had time and inclination to fully investigate the subject. That it is being now fulfilled may be seen from the following table, extracted from my statistics, which includes all the operations by supra-pubic lithotomy practised during the past ten years, of which I am informed:—²

Supra-pubic Operations during the last Ten Years.

Number.	Surgeon.	Date.	Age of Patient.	Description of calculi.	Deaths.	Time after operation of recovery or death.	Reference.
1	Mercier	1867	30	5ijj., 5ijjss.	..	43 days	Gazette Hebdom., 1869, p. 583.
2	<i>Beck</i>	1867	4½	grs. xvi.	..	25 "	Western Journ. of Med., Nov. 1867.
3	<i>Bell</i>	1872	3	grs. xevi.	..	21 "	Memorabilien Heilbronn, Mar 28, 1874.
4	<i>Bell</i>	1875	2	5ij.	..	30 "	Indiana Journ. of Med., Aug. 1875.
5	<i>Bell</i>	1875	3½	Large bean size.	..	62 "	Am. Practitioner, Mar. 1876.
6	<i>Brodie</i> ⁴	1868	35	Walnut size.	..	.....	Letter from Dr. Brodie, May 5, 1876.
7	<i>Brodie</i>	1868	42	5ijss.	..	21 "	Detroit Rev. Med. & Pharm. Sept. 1869.
8	<i>Betz</i>	1869	6	Acorn size	..	42 "	Memorabilien Heilbronn, Feb. 28, 1874.
9	<i>Betz</i>	1870	8	Cherry size	..	42 "	" " "
10	<i>Deering</i>	1870	45	2 (5iv. grs. xx. } 1 (5v. grs. xiv. }	..	14 "	Med. & Surg. Reporter, Apr. 29, 1876.
11	<i>Watson</i>	1871	5½	5vijss.	..	42 "	Letter from Dr. Watson, Oct. 6, 1874.
12	<i>Beck</i>	1873	6	5j.	..	21 "	" Dr. Beck, Sept. 10, 1874.
13	<i>Beck</i>	1874	3	grs. xxv.	..	12 "	" " Dec. 8, 1874.
14	<i>Beck</i>	1874	4	grs. lvijss.	..	11 "	" " Jan. 31, 1878.
15	<i>Bailey</i>	1874	2½	grs. lvi.	..	21 "	" Dr. Bailey, May 28, 1875.
16	<i>Bilroth</i>	1874	12	A tumour, apple size	..	33 "	" Dr. Karl Schwaighofer, Nov. 3, 1874.
17	<i>Laugen- beck</i>	1875	1½	Date seed size.	..	35 "	Arch. f. Kl. Chir. Bd. xxi. Sup. Heft, S. 210.
18	<i>Rochel</i>	1875	4	5ij.	D	7 "	This article.
19	<i>Sarr</i>	1876	55	5i., 5j.	..	16 "	Am. Journ. Med. Sciences, July, 1877.
20	<i>Fletcher</i>	1876	2½	grs. lxxvijss.	D	2 "	Letter from Dr. Fletcher, Jan. 30, 1878.
				Recovered . . . . .	.	.	18
				Died . . . . .	.	.	2
				Total . . . . .	.	.	20
				Average time of recovery, 29 days.			Death ratio, 1 : 10

¹ Op. cit., seite 127.

² There are omitted from this table two operations which were done immediately after failure of lateral lithotomy.

³ The names in italics are of American surgeons.

⁴ Brodie's patient was a female.

A superficial examination of this table would lead us to consider the cases as a pretty fair representation of the general run of lithotomy patients. That they are not too favourable for comparison will be seen when we note the general relation of the size of the calculi to the ages, as well as the fact that there were in five out of the twenty cases stones weighing over an ounce, in one the weight was $2\frac{1}{2}$ ounces, in one nearly $3\frac{1}{2}$ ounces, and in one as great as $8\frac{1}{2}$ ounces. This calculus was, as Mr. Patrick Herron Watson writes me, as large as the closed fist. He says, further, "I operated in the first instance by the ordinary lateral operation, but, finding the calculus unmovable, I at once cut above the pubes. Even then there was much difficulty in effecting its extraction, as the coats of the bladder clung to the stone, and ultimately it was only by pushing back the vesical coats off the stone, while the forceps communicated a twisting or spiral movement to it, that the stone was removed. Six weeks elapsed before the wound was quite healed. The perineal wound healed first." Thus one of the cases is seen to have been of the gravest possible character, and the operation complicated with an unsuccessful attempt by the lateral method. Billroth's operation was done to remove a myoma, the size of an apple, and was complicated by opening the bladder through the perineum.

Yet with all this there were only two fatal cases among the whole twenty. One of these, being described in this article, needs no further comment. In regard to the other, the operator, with rare and honourable candor, authorizes publication of the following epitome: "Child under chloroform; bladder distended with water; incision an inch and a half to two inches long; stone removed speedily; peritoneum cut by carelessness, and the wound improperly dressed—result death."

In concluding, I desire once more to urge upon the profession the careful consideration of this method of lithotomy, which recommends itself so highly on theoretical and, I believe, also on practical grounds. It is not necessary here to speak of its simplicity, the ease with which it may be carried out, the direct and unembarrassed route to the bladder it offers, the facility of finding and removing a calculus. These will suggest themselves to every anatomist, and have been already quite fully stated in the number of this Journal for July, 1875, to which I would refer any one who is interested in the subject. These advantages are in striking contrast to the complications and hazards attaching inseparably to lateral lithotomy, which may be found stated in every work on surgery. The statistical comparison, as usually made, does not, it is true, make such a good show as one would suppose *a priori*; but the deliberate judgment of surgeons must admit that such a comparison is not to be depended on in determining the merits or possibilities of the method, without giving due weight to those disadvantages under which it has laboured. Investigation shows that these disadvantages, which are more than sufficient to account

for the difference between what the results have been and what they should be, are entirely extrinsic and in no way pertain to the method as such. That they disappear in the presence of wider information and higher surgical skill, I believe to be indicated by the table above, which shows that in the past ten years the results of supra-pubic lithotomy have been as good as those claimed for any other method.

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ARTICLE X.

THE RELIEF OBTAINED BY THE USE OF NITRITE OF AMYL IN TWO CASES OF HYDROPHOBIA. By W. S. FORBES, M.D., Senior Surgeon to the Episcopal Hospital, Philadelphia.

IN a paper¹ read before the College of Physicians some time since, on the use of nitrite of amyl in tetanus, I recommended its use in hydrophobia. Since then it has been used in two cases, in one of which I was called in consultation. The other occurred in the practice of my friend Doctor Solliday, of Tanawqua, who very kindly furnished me with the notes he made at the time he treated the case. In both instances the relief on the inhalation of the amyl was very great and exceedingly comforting to the patient.

In each case the first applications of the amyl relieved the patient of that dreadful feeling of impending dissolution which is so striking a feature in this malady. It calmed them and enabled them to swallow both water and food to satiety. In neither case did the amyl appear to stay the advance of death. In both cases, however, the sufferings, preceding the last paroxysm, were relieved. The pulse fell, the sense of choking vanished, the breathing became regular and natural, the function of swallowing perfectly restored, and sleep obtained. In both cases death took place while the patient was in spasms.

The first case was Doctor Solliday's. The second case I saw myself.

CASE I.—Kate H., aged seventeen years, was bitten by a Spitz dog on the 26th of November, 1877, on the the lower lip. The wound was very slight, and healed quickly. On the 20th of December (three weeks and three days after the accident had happened), in the evening, she called at my office in a very excited state of mind, which she attributed to a fright she had some few hours before, and complained of a choking sensation coming on at intervals. Attributing her symptoms to hysteria some antispasmodic medicine was prescribed. Early the following morn-

¹ Transactions of the College of Physicians of Philadelphia, third series, vol. i. Case of Acute Tetanus successfully treated by the Inhalation of the Nitrite of Amyl. Read April 7, 1875, by W. S. Forbes, M.D.

ing I was summoned to her home and found her in a spasm, and upon inquiry then learned for the first time that she had been bitten by a Spitz dog.

The case was one evidently of well-developed rabies in all its bearings. The spasms came on every fifteen minutes.

There was total inability to use fluids, the very mention of which would produce a spasm. A quarter of a grain of morphia was given hypodermically. I saw her again three hours afterwards. There was no change. Half a grain of morphia was then given her hypodermically, but without the least noticeable effect. On the evening of the 21st, I gave her twenty-four drops of the nitrite of amyl by inhalation. She now complained of numbness in her extremities, and remarked that if the room was quiet she could sleep. At this moment I gave her a glass of water, which she swallowed without trouble. In fifteen minutes she was in a quiet sleep, which continued for four and a half hours. She was awakened by a violent storm of rain which made a great noise on the roof and shed of the house in which the patient lived. The spasms immediately began and were more violent than at any prior time, and continued until death took place late in the afternoon of the 21st. No *post-mortem* examination was permitted.

CASE II.—Michael C., thirty years of age, a bartender, was bitten on the 1st January, 1877, on the back of his left ring finger by a terrier dog which was suffering from rabies. On the 27th of March following, I was called to visit him in consultation by Dr. William Carroll of this city. Dr. Whitmer was likewise called in.

The patient stated that on the 20th of March the scar assumed a red, swollen look, and that an eruption appeared on the following day, the 21st. The eruption disappeared on the 26th, and in the afternoon of that day he felt stiff back of his neck and as if he had taken cold.

Late the next day Dr. Carroll was consulted, and prescribed for him, and when the patient attempted to swallow the medicine he found that he could not possibly do so. Doctor Carroll was immediately sent for, and at once told his friends that the man had hydrophobia. I saw the patient at midnight in consultation. I found his pulse rapid, 140, quick and small. His skin leaky and cool, and his countenance anxious, and his whole expression wild.

On talking to him a few minutes, I asked him if he had taken any nourishment; he said not since breakfast the day before. On asking him if he would like to take some milk, he said emphatically he would like it very much, but that he could not possibly swallow it, the very suggestion of it almost prevented him from breathing. At this moment, while talking, he sat up in bed, and his respiration became quick, and he became very much excited. The milk was brought, and he made violent efforts to control himself; he attempted to seize the glass, but it was only to grasp at it; he could not possibly take hold of it, and entreated us in a wild convulsive manner to take it away.

I then immediately advised that we should give him twenty-five drops of the nitrite of amyl by inhalation, which was done at once. By the time the evaporation of the amyl had taken place from the towel on which it had been given, the man said "What is it that you have given me? it is running all around in my head." When two or three minutes had elapsed his pulse was found to be 88, and his respiration quite natural, and he appeared to be quite calm. I then asked him if he thought he could take some milk; he said he thought he could; the milk was brought, and

he swallowed a pint with the greatest ease. He said he would take some more; that he had had nothing since breakfast the day before. Half a pint more of milk was then given to him with two ounces of brandy, and when he had swallowed it he asked one of the bystanders to give him a drink of water. The water pitcher was brought, and I poured out a glass full before him; and taking the glass as composedly as any one would, he drank off the whole of the water with the greatest comfort, and, he holding the glass out, I filled it again; after drinking nearly all of the water, he exclaimed, "Oh but that is good." I sat with him nearly two hours longer, during which time he was perfectly composed and got some sleep; then his pulse became more rapid and his breathing more frequent, and he asked for the amyl again, and I again administered about half a teaspoonful. Before doing so, however, I asked him if he would take a little brandy and water, when he replied, no, not until after breathing "that stuff," as he called the amyl.

The second application of the amyl had the same happy effect as on the first occasion; his pulse fell, his respiration became more calm, and he said then he would drink some milk, of which he took about half a pint, when I told him he had better take one or two eggs. Three raw eggs were then mixed up with half an ounce of brandy, and he swallowed them very readily and with great comfort. He then fell asleep, and I left him. I returned the next morning at 9 o'clock, and asked Doctor John Ashhurst to see him in consultation with Dr. Carroll and myself. We found our patient had slept some, but for an hour or more had been very much excited.

He could not have the glass of water brought near him; it was tried, and on its approach he became very much excited, and shook convulsively. Nearly a teaspoonful of the nitrite of amyl was now administered, and he again became quite calm and drank nearly half a pint of water, and soon after took some milk and eggs. On consultation we gave him half a grain of morphia hypodermically, and ordered both the morphia and the amyl to be repeated as occasion required.

At noon he became excited, when three-quarters of a grain of morphia injected under the skin again quieted him.

At three o'clock, however, he again became very much excited, and, on attempting to give him the amyl, he exclaimed that he was choking, and immediately went into a convulsion which ended in death.

No *post-mortem* examination was permitted.

ARTICLE XI.

BRIEF ACCOUNT OF THE SUFFERINGS OF A DETACHMENT OF UNITED STATES CAVALRY, FROM DEPRIVATION OF WATER, DURING A PERIOD OF EIGHTY-SIX HOURS, WHILE SCOUTING ON THE "LLANO ESTACADO" OR "STAKED PLAINS," TEXAS. By J. H. KING, M.D., Captain and Assistant Surgeon U. S. A.

It should be stated that the following report is not based upon personal observation. The writer was one of the relieving party sent in quest of the lost men, and shortly after meeting them noted down the substance of

this paper, which he gleaned while the events were still vividly impressed on their memories. It is feared that some of the details may, at first sight, appear scarcely worthy of notice; but any particulars concerning human beings deprived of water for such a long period, and under such circumstances, apart from bearing in a measure upon physiological science, are not totally devoid of interest.

On the evening of August 4th, 1877, two non-commissioned officers and one private belonging to company "A," tenth cavalry, came into Fort Concho, Texas, reporting that Capt. Nolan and Lieut. Cooper, with twenty-six soldiers, while in pursuit of marauding Indians, had wandered amongst the sand-hills on the Staked Plains; that no water could be found, and that, when last seen, the whole command was exhausted and dying of thirst.

A relieving party, to which the writer was attached, was organized at once, and left immediately in search of the missing men. After a rapid march of sixty-two hours we reached Capt. Nolan's supply camp, situated seven miles northeast of the Muchakoway Mountain and 140 miles from Concho, where we learned that Capt. Nolan, Lieut. Cooper, and all the men except four had just come in safely one hour previously.

As the lost men advanced towards us, we remarked their changed appearance since we had last seen them, a few weeks before; their aged and careworn faces portrayed the hardships they had undergone, while additional gray locks and other indications of sufferings were visible. The following is the painful history which they narrated.

Capt. Nolan, Lieut. C. L. Cooper, and forty troopers of Co. A, 10th Cav., with eight pack-mules, had for some days been scouting in the region of "Double Lakes" and "Cedar Lake," looking for Indians. On the 26th of July, 1877, a rumour was brought into camp at "Double Lakes" that a band of hostile Indians had recently been seen passing "Dry Lake." Capt. Nolan forthwith prepared to follow them, and broke up camp at 1 P. M., July 26th.

The Indian trail was struck west of Dry Lake, and pursued until dark, being then no longer discernible. The guide, in his anxiety to keep the Indian trail, had neglected his landmarks, and was unable to find water when the halt was sounded. The party were compelled, therefore, to make a dry camp and so pass the night. On leaving "Double Lake," each man's canteen had been filled, but in consequence of the intense heat they were emptied in the early part of the march, and what little water "Dry Lake" contained was so strongly alkaline that neither man nor beast could drink it.

At dawn the trail was again taken up and followed perseveringly, not only with a view of capturing the Indians, but also with hopes that it might conduct them to some lake or water-hole. Their course lay over a gently undulating country; the soil dry, mostly of a reddish colour.

covered with bunches of short grass, here and there a stunted mesquite-bush ten or fifteen inches high, and occasional twigs of scrub-oak of similar size. The heat was excessive—"coup de soleil" had prostrated two men, and all were suffering severely from thirst.

Towards sunset the trail commenced to spread, breaking into a multitude of ill-defined tracks, rendering further pursuit useless, and the chase was given up. Men had been thrown out on the flanks all day to seek for water, and for the same purpose the guide explored every valley and depression within view. Matters were assuming a grave aspect; many were faint and exhausted; some fell from their saddles. The horses needed water equally with their riders. After adopting all customary methods to extricate his command from this critical position, Capt. Nolan finally mounted the guide on his private horse, a tough animal, and ordered him to traverse the country, ranging wherever he thought it possible to find water. This guide was never seen afterwards. Capt. Nolan for a time awaited his return, and then determined to fall back upon "Double Lakes," which were supposed to be 75 or 100 miles distant, where he felt confident of obtaining water.

Another day was drawing to a close, and, as night came on, advantage was taken of the cooler atmosphere, and every nerve was strained to reach "Double Lakes."

The next day found them still marching onwards, and the mid-day tropical heat causing great suffering. The desire for water now became uncontrollable. The most loathsome fluid would now have been accepted to moisten their swollen tongues and supply their inward craving. The salivary and mucous secretions had long been absent; their mouths and throats were so parched that they could not swallow the government hard-bread; after being masticated it accumulated between the teeth and in the palate, from whence it had to be extracted with the fingers; the same occurred with mesquite-beans and whatever else they attempted to eat. The sensibility of the lingual and buccal mucous membranes was so much impaired that they could not perceive when anything was in their mouths. The condition of the "primæ viæ" may in a degree be realized, when it is explained that brown sugar would not dissolve in their mouths, and that it was impossible for them to swallow it. Vertigo and dimness of vision affected all; they had difficulty in speaking, voices weak and strange-sounding; and they were troubled with deafness, appearing stupid to each other, questions having to be repeated several times before they could be understood; they were also very feeble and had a tottering gait. Many were delirious. What little sleep they were able to get was disturbed with ever-recurring dreams of banquets, feasts, and similar scenes, in which they were enjoying every kind of dainty food and delicious drink.

At this stage they would in all likelihood have perished had they not resorted to the use of horse-blood. As the animals gave out they cut

them open and drank their blood. The horses had been so long deprived of every kind of fluid that their blood was thick, and coagulated instantly on exposure; nevertheless, at the time it appeared more delicious than anything they had ever tasted; in fact, every one was so eager to obtain it that discipline alone prevented them from struggling for more than the stinted share allowable to each. The heart and other viscera were grasped and sucked as if to secure even the semblance of moisture. At first they could not swallow the clotted blood, but had to hold it in their mouths, moving it to and fro between the teeth, until it became somewhat broken up, after which they were enabled to force it down their parched throats. This horse-blood quickly developed diarrhoea, passing through the bowels almost as soon as taken. Their own urine, which was very scanty and deep coloured, they drank thankfully, first sweetening it with sugar. The inclination to urinate was absent, and micturition performed with difficulty. A few drank the horses' urine, although at times it was caught in cups and given to the animals themselves. They became oppressed with dyspnoea, and a feeling of suffocation as though the sides of the trachea were adhering, to relieve which they closed the lips and breathed through the nose, prolonging the intervals between each inspiration as much as possible. Gazing on each other, their lips thus closed were observed to be covered with a whitish, dry froth, and had a ghastly, pale, lifeless appearance, as though they would never be opened again. Their fingers and the palms of their hands looked shrivelled and pale; some who had removed their boots suffered from swollen feet and legs.

The situation was now desperate, and feelings akin to despair took possession of them—suspicious ideas towards each other came over them, and they lost confidence in each other. They again saw the sun set, and another night was spent on these untrodden wastes, without alleviation of their misery. Persistent wakefulness now aggravated their mental anguish, and in vain at every halt they lay down and tried to sleep.

Their deplorable condition continued to gradually grow worse, until 5 A. M., July 30th, 1877, when, providentially, part of the command succeeded in making "Double Lakes." At this time a number of men were missing, some having been unable to keep up with the main column, while others had strayed after water.

Both officers and men were almost helpless on reaching "Double Lakes," and the wished-for water did not greatly benefit any of them this day. Canteens of water were at once strapped to the horses, and two or three men sent with them on the back trail to succor and help on the stragglers.

Fortunately, the following morning, Capt. Lee, 10th Cavalry, with a detachment of Youkaway scouts, touched at "Double Lakes" and rendered most valuable assistance to Capt. Nolan's party, despatching his

scouts on all sides to hunt for men and horses, and furnishing rations and some delicacies which the sufferers were in absolute need of.

The demands of their systems were so imperative that the inclination to drink was irresistible: it seemed impossible to refrain from pouring down water, notwithstanding that their stomachs would not retain it. As they kept filling themselves with water, it was vomited up; the same thing occurred when they endeavoured to eat dry food. Warm coffee was the only thing they had that revived them at all, until after Capt. Lee met them.

Although water was imbibed again and again, even to repletion of the stomach, it did not assuage their insatiable thirst, thus demonstrating that the sense of thirst is, like the sense of hunger, located in the general system, and that it could not be relieved until the remote tissues were supplied. Moreover, the activity of this regenerating process was prevented by the deficiency of water in the absorbent vessels themselves. The same cause is competent to explain the overpowering dyspnoea, which threatened the existence of these men; for only moist membranes allow the free passage of gases which must take place in respiration. The lungs of these men were filled with the purest air, yet they appreciated an almost overwhelming sense of suffocation. Another point worthy of our attention is the loss these men must have sustained by integumentary and pulmonary exhalations. The mean daily exhalation of watery vapour in expired air Valentin estimates at $1\frac{1}{2}$ lbs. av., and the daily loss by cutaneous transpiration at about 2 lbs.; in the case before us the quantities were influenced and increased by the conditions of temperature, exercise, etc.

The superior endurance of the mule over the horse was obviously manifested on this scout. The horses' tongues were swollen, mouths and systems generally affected much in the same manner as the men's; they could not chew or swallow grass; many gave out completely. On the other hand, the mules, comparatively unfatigued, would crop the grass and graze at every halt.

It is essential to remember that the sensations of thirst, to which these cavalymen almost succumbed, were intensified by the dry state of the atmosphere: they were toiling over arid plains and elevated plateaus in a climate noted for its lack of moisture.

On August 1st, 1877, Capt. Nolan heard that fourteen of his followers had managed to get all right as far as the Supply Camp. His total loss, therefore, after this disastrous scout, only consisted of two men dead and two missing, supposed to be dead. Capt. Nolan remained five or six days at "Double Lakes" to recuperate, and then retraced his steps to the Supply Camp, arriving there on August 7th, 1877.

FORT CLARK, TEXAS, Jan. 21st, 1878.

ARTICLE XII.

ON ACUTE ANTERIOR MYELITIS IN THE ADULT. BY JULIUS ALTHAUS, M.D., M.R.C.P. Lond., Senior Physician to the Hospital for Epilepsy and Paralysis, Regent's Park, London.

AMONGST the different forms of myelitis which come under our care clinically, that which is confined to the anterior cornua of the gray matter presents several features of considerable interest, more especially if we view it in connection with infantile paralysis, which, according to recent pathological researches, appears to be, to all intents and purposes, the same disease. Before entering into the pathology and treatment of the affection, I will as briefly as possible give the details of two cases of it, which have been recently under my care. In one of them the disease was located in the anterior horns of the *lumbar*, and in the other in the corresponding portion of the *cervical* enlargement.

The first of these patients was an officer in the British army, aged 31, single, of healthy parents, and temperate habits. He had entered the army in 1864; had from that time until 1869 been stationed in the Northern Provinces of India, and afterwards at various places in England. In 1874 he was sent to Malta, where he remained three years. At that time he was in the habit of taking violent exercise, as he found himself getting stout; he used to ride much on horseback, and played at rackets for two or three hours daily, which threw him into a violent perspiration. On June 25th, 1877, he was out taking exercise in a very powerful sun, and towards evening took a bath in the sea. The water felt very chilly, but he nevertheless remained about three-quarters of an hour in it; sometimes standing about on the shore, and then getting back into the water. On coming out at last he felt benumbed, and in the night had acute pain in the small of the back and the legs. He could not recline nor sit still for even a few minutes, and felt so restless that he did not sleep at all, but kept walking about in his rooms all night. Hot fomentations relieved the pain, but only for a short time, and he was much exhausted in the morning. On the second day the pain was not so acute; he could walk about without assistance, but the back felt stiff and the legs ached. Towards evening of the same day he could not walk so well; he had to hold on to the shoulders of two brother officers, and the right leg dragged. He could pass his water without difficulty. There was loss of appetite; he only took a little soup. Hot sponging relieved him, and made the limbs feel easier for a short time. At night he had an opiate, and he slept for sixteen hours consecutively, perspiring profusely all the time.

On awakening on the morning of the third day he felt exhausted, and he found that his legs had become entirely powerless from the hips downwards; he could only move them with his hands. The acute pain was gone, a dull aching only being felt. The back and loins felt very stiff, and he could not turn over in bed, showing paralysis of the muscles of the loins. The legs were tender to the touch, and the feet sore when handled. He had to strain a little when passing his water, and the bowels were confined. The loss of appetite continued. The patient was now blistered

and leeches in the back. The temperature, which had previously not been taken, was now found to be 101° , with the thermometer placed under the tongue. The next night he slept a little; the restlessness being relieved by his position being shifted frequently. There was no feeling of tightness around the lower portion of the body, nor any loss of sensation.

On the fourth day there was no acute pain, but the dull aching in the back and legs continued. The patient was put into an easy-chair, and felt better. The bowels were relieved by an enema, and the water was passed after some delay, the streams appearing fairly strong. The appetite was improved; the temperature 103° . The day and night registrations of the thermometer varied but little. The legs were rubbed, which made them comfortable, and they became red under the friction. There was no priapism at this or at any other time.

The succeeding days were much the same. The thermometer gradually went down to 101° , and remained at this figure for three weeks more. The general condition improved, the bowels acted regularly, and the water could be passed at all times. The appetite was better, and the patient slept longer without requiring to have his position changed so often, being easier on the back than on the side. He generally spent the day sitting in an easy-chair, which did not fatigue him. The legs, however, now began to waste considerably.

In about three weeks the temperature had fallen to 98° , and the patient was then given solid food. The general condition was now quite satisfactory, and he began to move the toes of the left foot a little. Strychnia was injected subcutaneously into the inner part of the thighs, and rubbing and magneto-electricity were used for about a fortnight. He was invalided in about the commencement, and left Malta. He went to Guernsey, where he was treated with strychnia three times daily, and the continuous current; with the effect that the muscles developed better and became firmer, and in December last he came to London to place himself under my care.

On examining him on December 13th, I found that there was complete paralysis of motion in both lower extremities from the hips downwards. The muscles of the loins were not paralyzed, as the patient had no difficulty in turning over in bed; there was no movement whatever in the ankle-joint, the knees, and the hips, but the toes of the left foot could be slightly flexed. Faradization of the nerves and muscles of the lower extremities did not produce any response at all, even if the power of the current was increased to the maximum strength by the double-celled coil of Stöhrer's apparatus, which caused an almost intolerable sensation of pricking and burning; yet not the slightest fibrillary twitches occurred in any of the muscles acted upon. The continuous voltaic current had no influence on the *nerves*, but, when applied directly to the *muscular* substance, caused sluggish contractions, more particularly in the left leg. Making with the anode had most effect, closing with the cathode less, and opening with either poles was quite ineffectual. There was no muscular rigidity anywhere, all the muscles being completely flabby and relaxed, and offering no resistance to passive movements impressed upon them. They had a doughy feel, and, as there was not much wasting in the limbs, a transformation of some portion of muscular tissue into fat could be assumed with a high degree of probability.

Sensation was perfectly normal, there being neither pain nor paræsthesia nor anæsthesia. Pressure on, and percussion of, the spine did not show

any tender points; a hot sponge could be carried along the back without giving rise to a feeling of soreness; and faradization and galvanization of the spine showed it to be in its ordinary condition of sensibility. The senses of touch, of temperature, of locality, and all the other varieties of sensation in the lower extremities were likewise normal.

Reflex excitability, on the other hand, was completely abolished. Tickling the soles and the knees, and irritation of the inner surface of the thighs, were well perceived, but did not cause any movements in the paralyzed limbs. Percussion of the tendon of the rectus femoris and of the tendo Achillis, remained likewise ineffectual.

The temperature of the limbs was 94° to 95° . The skin was slightly moist, ælenatous, and in parts mottled. There was no decubitus,¹ nor had there been any sign of it. The sphincters were perfectly normal; the action of the bowels regular, the urine healthy; nor was there any loss of expulsive power in the bladder. Sexual desire, however, which before the affection came on was keen, was lost, and no proper erections nor nocturnal emissions had occurred since the disease became developed. Digestion, respiration, and the heart's action were quite normal. *There were no head symptoms.*

On considering the peculiar features of the case, the diagnosis could not be doubtful. As only the motion of the lower extremities was lost, and sensation in them had not suffered; as there was no decubitus, and no affection of the bladder and rectum, the case was evidently one of acute polio-myelitis,² or inflammation of the anterior cornua of the lumbar enlargement of the cord, which had led to paralysis and atrophy of the whole of the muscles of the lower extremities. The close analogy of the symptoms with those which are observed in the majority of cases of infantile paralysis was very striking. There had been fever, the thermometer having run up to 104° , and remaining for more than three weeks above the normal average. Then there had never been any head-symptoms, which is explained by the circumstance that the brain of adults offers more resistance to morbid influences of this kind than that of children; and this is more particularly so where the seat of the disease is at a considerable distance from the brain, as in the lumbar enlargement. Where the disease affects the upper portion of the cord, cerebral symptoms may make their appearance in the adult, as I shall show presently by another case. In the present instance there had, however, been general malaise, with pain and tenderness in the loins and lower extremities, restlessness, and complete loss of appetite. As is so well marked in infantile paralysis, the loss of power had set in rapidly, there having been paresis or incomplete paralysis on the second, and complete paralysis on the third day, with total relaxation of the muscles. From that time the state of motion had not perceptibly varied. The bladder was only to the very slightest extent affected on the third day of the disease, but rapidly recovered its full power. The fact that there was at no time any muscu-

¹ [Decubitus is a German expression for *bed-sore*, and is used here in this sense.—ED.]

² From *παις*, gray, and *μυελ*, marrow.

lar rigidity, explains why no deformity worth speaking of took place. In the adult, deformity is altogether less likely to occur than in children, because the joints and ligaments are firmer, and the growth of the bones is finished at the time of the invasion of the disease; and deformities occur as a general rule only where one set of muscles is paralyzed, and another has escaped the lesion.

The second case, which I am now going to relate, was one of acute anterior polio-myelitis affecting the *cervical* enlargement of the spinal cord:—

M. M., a Scotch gentleman, aged thirty-four, single, of no regular occupation, came under my care in June, 1877, and gave me the following history: In November, 1864, being then an undergraduate at Edinburgh, in good health, and studying hard, he attended a crowded meeting in the Music Hall of that city, during which he perspired profusely. When he came out of doors it was snowing, with a keen northerly wind blowing. He dined, and then walked out again for about an hour. Before returning home he felt very chilly; two hours later he perceived pain and stiffness in the back of the neck, which increased on attempting to move the head. He gradually became more chilly and drowsy, and tried hard to shake it off, so as to be enabled to study, but to no purpose. At bedtime, the skin being hot and dry, he took some hot whiskey and water, but continued feverish, and lay tossing about in bed all night, very restless, and unable to go to sleep. Next morning he got up and went to his class, but felt so drowsy and languid that he was obliged to return home.

That afternoon he took a dose of Epsom salts, and having during the following night to traverse long windy passages to the closet, he caught a second chill. The two following days he was up, but did not go out, as the *excessive drowsiness* and *languor* continued without abatement. During the night of the fourth day, he got out of bed for a drink; but after making a few steps his knees gave way suddenly, and he fell heavily on his back. A friend with whom he was lodging had to assist him to get up, and with some difficulty got him into bed. He now perceived a difficulty in passing his water, but ultimately succeeded in doing so. Next morning, however, he found himself entirely helpless, as the paralysis had spread to both upper extremities. The left side of the body was completely useless, but in the right he could just move the fingers and toes a little. All this time there was no pain, no loss of sensation, and the fever frequently left him. The temperature was not taken at any time during the progress of the case. He was given antimonial wine, and fell into a profuse perspiration, which continued without intermission for about a fortnight. The drowsiness gradually left him, the head appeared quite unaffected, and the general health was good, for, with the exception of the loss of power, he felt, about a month from the commencement of the disease, as well as ever he did in his life. There was, however, complete paralysis of the left, and nearly complete loss of power in the right side. He could not even move his head on the pillow, and for six months was not taken out of bed.

There was never any tendency to decubitus. The condition of the bladder varied; the patient being sometimes unable to pass his water, so that the catheter had to be used, while generally he could pass it, although with some difficulty. The urine would appear never to have

undergone those changes which are so marked in transverse myelitis, viz.: alkaline decomposition, with formation of triple phosphates, vibriones, bacteria, and mucopus; but it would seem to have been normal throughout. The bowels were sluggish; purgatives had no effect, and enemata were found necessary. The treatment at this time consisted of blistering at the back of the neck, strychnia, and the use of the magneto-electric rotatory apparatus, which was kept grinding away at his hands, and sometimes at the soles of the feet—a most unscientific and foolish application—three times daily for half an hour. The electrodes were brass tubes without handles; the machine was used for two or three months, and the patient believed that it did him more harm than good. He was very little better by May of the following year, and was then taken to his home in the Highlands, where he began to improve considerably, and had in a month recovered full power over the bladder and bowels. In June he went to the Strathpeffer sulphur springs, and derived apparently some benefit from them, for, when he returned, he could stand when put on his legs, and walk a few steps without assistance.

During the following years he pursued various plans of treatment, more especially different applications of electricity, arsenic, and hydropathy, and he gradually improved, without, however, being able to attribute any very decided result to any of them.

At the time he came under my care, nearly eleven years after the commencement of the disease, there were no symptoms pointing to an affection of the brain or cerebral nerves. Sensation was perfect all over the body, and the general health was good. With regard to the state of motion in the upper extremities, the patient had to a great extent recovered the power over the right arm and hand, which he could move in all directions; he could write a letter, wash and dress himself, and squeezed the dynamometer to the extent of 48 kilogrammes. The muscles, although not robust, were fairly nourished, and responded fairly well to faradization and galvanization. The left arm was much more feeble than the right. There was some wasting of the trapezius, deltoid, and serratus muscles, causing slight dislocation of the caput humeri; the biceps was very feebly developed, and the flexor muscles of the forearm were also in a state of atrophy. The muscles of the ball of the thumb, and the first interosseous muscles were greatly wasted. In accordance with these symptoms the patient had but little power in the left arm, which he could not raise above the horizontal line; and the hand was to a great extent useless and awkward. There was, however, a degree of faradic and galvanic response, which was in exact proportion to the general state of motion in and nutrition of the muscles. Reflex excitability was normal in the right, and somewhat reduced in the left arm. With regard to the lower extremities, it was found that, when once fairly on his feet, he could walk with the aid of a stick for about two hundred yards. After doing that distance, however, the back became painful, and the patient got out of breath, so that he was obliged to rest. With crutches he could walk several miles. He could stand for hours without fatigue, while he was always worse after sitting for a long time. He had great difficulty in turning in bed, and in undressing, and was generally unwieldy. The left leg was much more powerless than the right; and there was much greater atrophy in the muscles of the left thigh and leg. Nevertheless, what was left of these muscles responded well to galvanization and faradization, and there was no lack of reflex excitability in the lower limbs, both as far as skin and

tendons were concerned. Apart from the unsatisfactory state of motion, the patient was in every respect in perfect health.

From this description it will be seen that the two cases of acute anterior polio-myelitis which I have just described were in most respects exceedingly similar. In both the cause was evidently cold; although it does appear singular that both patients had often before been exposed to chills on a heated body without having been any the worse for it. More especially the subject of the second case was brought up inured to hardihood, and could with perfect impunity endure severe and prolonged exposure to heat, wet, and cold; and even at the present time a thorough drenching and sitting in wet clothes would not affect him. Moreover, both patients had numberless times before experienced much more severe chills and colds than the one after which the myelitis became developed; and it appears, therefore, probable that in both cases there must, at the time of the invasion of the disease, have been a state of diminished resistance of the cord to unfavourable influences. Neither of the patients had the neurotic constitution; neither had had syphilis. In both there were fever and systemic disturbance at the commencement; in the former, where the lumbar enlargement was affected, the head remained perfectly clear, and there was only great restlessness; while in the latter, where the cervical enlargement suffered, there were, in addition to restlessness, great drowsiness and languor. In both there was profuse perspiration at an early period of the disease; and the paralysis was quickly produced, and remained exactly the same for a considerable time. Where the lumbar enlargement suffered, the bladder was hardly at all affected, while in the case of cervical polio-myelitis the bladder suffered as far as its expulsive power was concerned, but recovered its tone at a comparatively early period.

There are few diseases which could be confounded with acute anterior myelitis. *Hemorrhage into the spinal cord* may produce sudden paralysis, which is followed by atrophy and loss of reflex excitability; but there is an absence of fever, the invasion of the paralysis is still more sudden, as it generally comes on in a quarter of an hour or even less, and there is anaesthesia, paralysis of the sphincters, and decubitus.

In *acute central or transverse myelitis* there is always anaesthesia of the skin, paralysis of the sphincters, and tendency to decubitus, by which that disease is sufficiently well distinguished from acute anterior polio-myelitis.

Progressive muscular atrophy is very chronic in its invasion, and there is wasting of muscular tissue before the paralysis sets in. There are many other distinctive features between these two diseases, but the two I have just mentioned are quite sufficient to enable us to make a proper diagnosis.

Brown-Séguard's *spinal hemiplegia* or *hemiparaplegia* could hardly be confounded with anterior polio-myelitis. It is true that there is motor paralysis, affecting either the leg alone, or the arm and leg of the same

side; but while in polio-myelitis sensibility remains normal, there is in Brown-Séquard's disease hyperæsthesia on the paralyzed, and anæsthesia on the opposite side, which renders the diagnosis certain.

From *cerebral hemiplegia* anterior polio-myelitis may be distinguished by the different commencement of the paralysis; by the affections of cerebral nerves which accompany cerebral paralysis, and particularly by the circumstance that in cerebral paralysis the farado-muscular excitability remains unaltered, or nearly so, for years after the invasion of the disease, while in polio-myelitis it is lost in the second week.

Sclerosis of the lateral columns of the cord resembles anterior myelitis by there being no affection of sensibility, no decubitus, and no paralysis of sphincters; but the invasion of the complaint is essentially chronic; and incomplete or complete paralysis, with muscular rigidity and increased reflex excitability, more especially of tendons, are the chief symptoms. Where the patient is able to walk, he shows a peculiarly rigid or spastic gait, which is entirely different from the halting and lame gait of a man suffering from chronic myelitis, as well as from the jerky and uncertain walk which is seen in locomotor ataxy.

Sclerosis of the lateral columns may, however, coexist with wasting of the anterior cornua, and this constitutes a disease which Charcot has recently described as *lateral amyotrophic sclerosis*. This mostly begins in the upper extremities, which become more or less paralyzed and wasted, while the antagonists of the paralyzed muscles become rigid and contracted. The consequence of this is, that the arm is held tightly to the body, the forearm flexed and pronated, the hands and fingers strongly flexed. After this has existed for some months, the disease progresses to the lower extremities, causing incomplete or complete paralysis with rigidity. There is no anæsthesia, no decubitus, no paralysis of sphincters. After a time the rigid muscles begin likewise to waste, when the contractions disappear. Death takes place by the degeneration attacking the motor nuclei in the medulla oblongata, with consequent paralysis of the lips, tongue, pharynx, and larynx, that is labio-glosso-pharyngeal paralysis. The chronic and progressive course of the disease is sufficient to distinguish it from polio-myelitis, the onset of which is rapid.

If we consider the well-marked symptoms of the disease to which I have directed attention in this paper, we can entertain no doubt that we have to do with an acute inflammation of the anterior gray matter, which affects principally the lumbar or cervical enlargement of the cord. The large ganglionic cells of the anterior horns are partly motor and partly trophic in their functions, while the small vesicular ones of Clarke's columns are sentient, and the smallest posterior ones vasomotor or sympathetic. In accordance with this, we find in the two cases which I have related paralysis of motion and of nutrition in the affected motor nerves and muscles, but no affection of sensibility or of the vaso-motor system of nerves.

If we could have made an inspection of the cord in these cases, we should have discovered an acute inflammation of the anterior horns; distension and attenuation of the nerve-sheaths; swelling and division of the axis cylinders; oedematous degeneration and destruction of the ganglionic cells; swelling of the fibres of the neuroglia and proliferation of its nuclei; and dilatation of the arterioles and small veins, with rupture of the capillary vessels and effusion of blood; in short, all the signs of red, and afterwards yellow, softening of the substance of that portion of the cord, the inflammation being probably parenchymatous as well as interstitial.

A matter of extreme interest in these cases is the relation of the paralyzed nerves and muscles to the different forms of electricity. Until quite recently it was believed that the peculiar phenomena which I have described above were characteristic for peripheral paralysis, from injury or lesions of the nerves; but it has been shown that they occur likewise in infantile paralysis and in acute anterior myelitis of the adult. There is complete loss of *faradic* excitability of the nerves, as well as of the muscles; complete loss of *voltæic* excitability of the *nerves*; but exaltation of voltaic excitability of the *muscles* in the early stage, and preservation of the same in the later stages of these diseases. These changes correspond closely to the degeneration which is going on in the nerves and muscles, after these have been separated from their centres of nutrition, either by a break in the continuity of conduction between centre and periphery—peripheral paralysis, or by actual destruction of the nutritive centres—anterior myelitis; and they are to a great extent accounted for by differences in the duration of the several currents. Faradism, which consists of a number of instantaneous currents succeeding each other rapidly, has no effect at all; a continuous voltaic current, which is by an artificial arrangement rendered short or instantaneous, has little or no effect, even if the current-force be considerable; while a voltaic current of long duration, even if it be comparatively feeble, has a considerable action, which increases proportionately to the length of time during which it passes through the structures acted upon. We are as yet, however, entirely unable to explain the rationale of the exalted volta-muscular excitability which is found in these conditions.

The *prognosis* of acute anterior myelitis is not favourable, since complete recovery is the exception, not the rule. This is more especially so where the acute attack is treated in the old-fashioned routine manner, of which I shall speak presently. It is, however, rare, even where the treatment has been inefficient, that not some amount of improvement ultimately takes place; and patients mostly regain in time some use of their limbs, more particularly if they are young and vigorous at the time they are attacked by the disease. The prognosis will no doubt be very much better when the disease comes to be more thoroughly understood, and is specifically treated from its very commencement.

The *treatment* of myelitis which is generally recommended, consists, as long as there is fever, of rest in bed, calomel, leeches, and cupping to the spine, more especially the region of the cervical and lumbar enlargement, rubbing in of mercurial ointment, and counter-irritation by tincture of iodine and blisters. With the exception of rest and a scanty diet, I believe these measures to be useless, and have, therefore, ceased to employ them. The only remedy in which I have any confidence in the acute stage of the disease is the subcutaneous injection of ergotine. Ergotine is known to have the power of contracting the bloodvessels of the spinal cord, more especially when it is directly introduced into the circulation, without the intervention of the stomach; and as intense hyperæmia of the arterioles, small veins, and bursting of capillary vessels of the cord from excessive distension, is one of the characteristic anatomical features of the disease, ergotine appears to be a direct antidote to that condition. I use a solution of Bonjean's ergotine in distilled water, which, if thoroughly pure, is generally not irritating; and of this I inject a grain as a dose to begin with. Our guide in carrying out this treatment must be the thermometer and the pupil. Where the temperature runs up to 104° or 105° , the remedy should be more freely used than where the fever is slight; in severe cases three grains may be injected at a time, and this may be repeated two or three times a day. The fever being in all these a secondary phenomenon, consequent upon local inflammation, may be rapidly reduced by the use of the ergotine, which thus proves a truly antiphlogistic remedy. Where the pupil becomes very much contracted, and continues so for some time, it is better to wait before making a fresh injection. This treatment should be continued until the temperature has fallen to the normal standard. The place of injection is, on the whole, a matter of indifference; but, where the lumbar enlargement suffers, I generally inject in the leg; and where the cervical enlargement is inflamed, I prefer the arm.

Such is the treatment I recommend for the attack itself. As soon, however, as the inflammation has subsided, the ergotine must be discontinued, and iodide of potassium in doses varying from ten to twenty grains, several times a day, be substituted for it. This serves to induce the absorption of inflammatory effusions, and to check the excessive growth of connective tissue which is liable to flow, and thus allows those ganglionic cells, which have not been entirely destroyed by the disease, the possibility of recovery. The constant voltaic current should now also at once be used, and be made to pass through the diseased portion of the cord. If the legs only are affected, the current should be directed to the lumbar enlargement, the positive electrode being placed to the loins, and the negative to the umbilicus. Where the arms or all four extremities suffer, the cervical enlargement should be principally acted upon, and the anode is then placed to the nape of the neck, and the cathode in front of

the throat. Where we have reason to assume that the dorsal portion of the cord is implicated, this should likewise receive the voltaic influence. Erb, of Heidelberg, has recommended to send the current first in one direction, and then in another, so as to utilize the influence of either of the poles to the diseased parts. From general considerations of the catalytic effects of the current, however, the action of the anode appears to me to be most called for; and I should, therefore, employ Erb's proceeding only if the mode of application which I have just recommended should fail to produce the desired effect. The electrodes should be large, the current-force gentle, and the application continued for from three to ten minutes, according to the extent of the lesion.

An *early* resort to this mode of voltaic treatment is of the greatest importance; for if the ganglionic cells, which resisted destruction in the first instance, have in the course of time become compressed and squeezed by excessive development of connective tissue, only little can be expected of any therapeutical measures.

Where the case comes under treatment, as is only too frequently the case, six months or longer after the commencement of the disease, we have to do more with the consequences of the attack than with an actively progressing pathological event. Iodide of potassium is now useless, and small doses of phosphorus and cod-liver oil are now the best medicines for improving the nutrition of the nervous matter. The phosphorized cod-liver oil, prepared many years ago at my suggestion by Messrs. Savory & Moore, of London, is a very useful preparation at this stage. Subcutaneous injections of strychnia, which are much employed, have not in my hands yielded those results which would appear to have been seen by other observers; and I cannot, therefore, recommend their use. Mountainous or sea air, the thermal springs of Rehme, Wildbad, Toplitz, and Gastein, and a nutritious and even stimulating diet are more useful. The voltaic current may also be applied to the seat of the disease in the cord in the way just described; but as we have at this stage to do with wasting of the paralyzed nerves and muscles, a peripheral application of the current, alternating with faradization, may now be employed. Gymnastic exercises of the muscles, shampooing, and friction of the paralyzed limbs with linimentum ammoniac, and other stimulating applications, are useful auxiliaries in the treatment of these conditions.

ARTICLE XIII.

THE CONNECTION BETWEEN STOMACHIC AND LABYRINTHINE VERTIGO.

By EDWARD WOAKES, M.D., London, Surgeon to the Hospital for Diseases of the Throat and Chest, and to the Metropolitan Dispensary for Diseases of the Ear, London.

A GREAT deal of attention has recently been devoted to what is commonly called Ménière's disease, but which, from the anatomical organ to which the symptoms are mainly referred, is also known as labyrinthine vertigo. The elaborate treatment of Dr. Gowers, Dr. Hughlings Jackson, and Dr. Ferrier, compasses the present knowledge of the subject, so far as it relates to that form of vertigo resulting from the progressive invasion of the labyrinth from lesions of the middle ear.

But there is another class of vertiginous patients in whom the auditory apparatus is, up to the time of the attack, perfectly healthy, and may remain so after it has passed off, whose symptoms are nevertheless due to a more or less temporary lesion of the labyrinth, to which organ, in fact, the general consensus of opinion refers every such disturbance of equilibration as expresses itself in giddiness. It is to this class of cases I wish to invite attention, and as in their investigation we shall get some insight into stomachic vertigo, the area of interest of the subject will be proportionately widened.

The form of vertigo to which I allude is that in which the patient, without being aware that he is otherwise than quite well, is suddenly attacked with giddiness, and falls prostrate. This may never, in that patient's experience, be repeated; or the attack may recur after a shorter or longer period. The cases in question differentiate themselves from those treated of by the authors referred to in the fact already stated that the auditory apparatus is previously quite healthy, though they possess this feature in common with them that there is no loss of consciousness. *After* the attack the patient finds himself in one of the following conditions: his hearing may be normal as heretofore; or he may be quite deaf on the side to which he fell; or there may remain some impairment of hearing only, with probably confused noises in the head.

As regards concomitant symptoms, nausea and a splitting headache may remain. There is also a painful sense of fear, a horror lest the attack should be repeated, and a dread of becoming epileptic; to which apprehension the members of our profession who suffer from the attacks are specially prone.

The following example, the subject of which was a medical man, personally known to me, illustrates some of these features:—

When about thirty years of age, and being fully engaged in a very arduous country practice, he was one evening summoned to a patient, being already fatigued with the usual day's work. On reaching the house

he became giddy, and, as the door was opened, fell into the hall, a proceeding which, though perfectly conscious, he was quite unable to avoid. It is needless to say he was very much frightened by the attack, but was not otherwise affected by it. In the course of the following year a second seizure occurred exactly corresponding in character to the former, but for more than twenty years subsequently there was no repetition of the attack, although he was for a lengthened period the subject of intense headaches, with tinnitus, for which he submitted to the ordinary method of depletion then in vogue. The time at which these events happened was over thirty years ago, when Mérière's disease was of course unheard of and Flourens had not yet experimented on the semicircular canals. It was not, therefore, extraordinary that this patient should be haunted with the dread of becoming epileptic. So much, in fact, was this the case that he frequently devised the course he should pursue should he be attacked when riding over the country roads of his district.

These details are important, as they illustrate the undefined terror displayed by the subjects of labyrinthine vertigo; and though no deafness existed as their result, the symptoms are such as help to separate the disease from others cognate to it.

Adhering to the principle laid down in a former paper, we shall seek the clue to the symptoms in the *source and vaso-motor relations of the bloodvessels supplied to the region manifesting them*: a proceeding which will show that this particular region, the labyrinth, possesses some very remote, and possibly unlooked-for alliances.

At this point it will be necessary to repeat what I have elsewhere had occasion to insist upon, viz., that the receptive part of the auditory apparatus receives its vascular supply from a totally distinct source—the vertebral artery—to that which is furnished to the conductive portion of the ear. This, in itself, is a suggestive fact, as the internal carotid in its bony canal is placed so close to the internal ear that one might naturally look to it as the source whence its vessels would be derived. As a matter of fact, however, neither the external nor internal carotid is in any way concerned with the circulation of the labyrinth. It is the *vertebral artery* and its relations we have to consider. The origin of this vessel from the subclavian deep down in the neck, and its prolonged course upwards, guarded by the bony sheath formed by the vertebral foramina, acquire an increased importance when its relations to certain nerves are considered. In the first place, this position brings it into very close proximity with the inferior cervical ganglion, from which it derives a rich plexus of nerves, communicating in their upward course with the several cords which form the brachial plexus.

It is important here to note that this lower cervical ganglion furnishes also the principal inhibitory nerve of the heart, viz., the inferior cardiac nerve. The experiments of Burdon Sanderson and others show that this nerve is capable of slowing the heart's action, even to the extent of stopping it; we wish to point out its close relationship with the nerve which regulates the supply of blood to the labyrinth, both passing through the

same sympathetic ganglion. Nor can it be without design that such an arrangement exists. Glancing for a moment at one aspect only of the functions of the semicircular canals, that, viz., by which, under circumstances of altered tension of their endolymph, they are capable of causing the individual to lose his equilibrium and fall to the ground, we get some insight into the object gained by associating the nerve which regulates this tension with that which tends to check the heart's action. The connection is such that an impression influencing the heart will affect the labyrinth. Thus a strong mental emotion arising centrally and propagated to the heart through its inhibitory nerve, which tends to stop its action, will also be deflected in the ganglion to the nerve regulating the blood supply of the labyrinth, and by suddenly changing the tension in this organ will cause the subject to fall to the ground, so removing the mechanical impediment to the circulation which the upright posture implies. In this way time is allowed for the excited influence of the heart to subside, while the subject of it is placed perforce in the recumbent attitude.

Referring now to the communications between this ganglion and the brachial nerves, besides those already mentioned, there are others proceeding directly from the ganglion to the brachial plexus. It is this arrangement, doubtless, which explains an occurrence noticed in gunshot wounds of this plexus. It was first pointed out by Drs. Mitchell, Moorehouse, and Keen in a treatise on gunshot wounds of nerves, published after the late American war. These observers record most succinctly that the subject of such a wound, whether received in the arm, axilla, or neck, immediately falls to the ground, without losing consciousness. This circumstance is quite unique; it has not been observed in connection with wounds of any other correspondingly non-vital part of the body. A certain amount of collapse attends these cases, from which it may be legitimately inferred that the shock is conveyed not only in the direction of the labyrinth, but also through its inhibitory nerve to the heart.

Any one who is conscious of the possession of what is popularly called the "funny bone," may, if he chooses, verify these statements, at least to a certain extent, by giving it a blow considerably in excess of that which is sufficient to infuse the well-known tingling sensations in the fingers. It once happened to the writer to witness such an experiment in the instance of a lad who was struck on this spot by a hard tennis-ball thrown with considerable violence. Immediately he became giddy and confused in his head, and would have fallen but for the support of some railings, and altogether the extreme distress which he manifested appeared out of all proportion to the slightness of the cause. At the time of the occurrence the symptoms were quite inexplicable by any known relations of the injured part. The observations of the American surgeons just quoted, as well as the anatomical continuity established through the infra-cervical

ganglion between the brachial nerves and the labyrinthine circulation, afford, we venture to submit, a ready explanation of the phenomena to any one who candidly examines them.

It will be apparent that we are taking for granted the physiological fact that a shock communicated to the inhibitory nerve of a vessel temporarily withdraws its function, allowing it to become greatly distended with blood; it is this sudden distension which produces the pressure on the endolymph, and the consequent subversion of the function of equilibration, which will be proportionate to the severity of the shock.

Having thus seen how labyrinthine vertigo of a very severe type may be excited through these far-off alliances of the semicircular canals, we shall be in a better position to understand the corresponding relations existing between the stomach, with its adjacent viscera, and the labyrinth. Before tracing these, it will be of service to refer to Trousseau's remarks on this subject, he being probably the first writer to call marked attention to *stomach vertigo* in his chapter entitled "*Vertigo a Stomacho Læso*," where he discusses it with his usual candor. No one, we venture to think, can carefully study the instances he adduces of this disease without sharing the conviction that the gastric lesion was only a subsidiary factor in the production of the symptoms he refers to it. That Trousseau had himself some suspicions of this is evidenced by his own statement. Thus, after describing the case of a lady in whom distressing giddiness, brought on by the bustle of the streets, the passing of a carriage in rapid motion—causes exactly calculated to interfere with the organ of equilibration when unduly susceptible—and who became worse by depletion and abstinence from generous diet, but was cured by tonics and restoratives, remarks, "I have frequently asked myself whether the treatment which in these cases I directed against the affection of the stomach was not, unknown to me, addressed to the nervous system; and whether I had not diagnosed a gastric affection, rather from the effect of treatment, than from the symptoms of the disease; whether I had not been led into an error in diagnosis, by obtaining success from treatment usually employed with benefit in dyspepsia."¹

In this candid commentary, my own experience of so-called stomach vertigo would lead me entirely to concur. A fair example is afforded in the following case:—

A gentleman, a member of the Society of Friends, consulted me some five years ago for symptoms closely corresponding with those enumerated in the foregoing quotation. He was about 73 years of age, and though never robust, was otherwise in good health, except that any exertion brought on giddiness, and walking in the streets was attended with a feeling that he would fall forwards. His appetite was good, although the tongue was loaded, and it was observed he had no teeth, not even artificial ones, but it was ascertained that he ate meat with a relish. In view of the edentu-

¹ "Lectures on Clinical Medicine," New Syd. Soc. Ed. vol. 3, p. 544.

lous state of his jaws, and with Trousseau's teaching in recent recollection, he was prohibited taking any solid food; small doses of bromide of potassium were given at six hour intervals. Under this treatment he made a rapid recovery. After an interval of nearly a year he returned to a mixed diet, and in a short time his old symptoms returned, but to a less extent than formerly. The same treatment was again had recourse to with a like result, and in the period that has since elapsed the rôle of circumstances just detailed has been enacted on several occasions. In fact, the sensitiveness of this patient's stomach to solid food appears to be proportionate to the motility of his equilibrating nervous centre.

It is a suggestive feature of this case, as also of others that have occurred to me, that the progress towards recovery was invariably expedited by the bromide. Obviously, the point at issue is, how to associate stomach vertigo with the labyrinth. A very direct channel of communication is established between the pneumogastric nerve and the lower cervical ganglion by means of a fasciculus given off by the former about the point where the recurrent laryngeal leaves the trunk of the nerve. That the course of this branch is from the stomach to the ganglion will be apparent when it is remembered that vaso-motor fibres associated with cerebro-spinal nerves pursue an opposite course to the latter. When it is further remembered that nerves entering a ganglion break up and communicate with its corpuseles, by which means they contract new relationships with other nerves entering the ganglion, it will not be difficult to understand how the stomach is brought into relationship with the labyrinth. There can, we think, be no doubt that this correlation is effected in the inferior cervical ganglion, through the medium of the communication just noted from the pneumogastric to the ganglion, impressions passing along which become in it transferred to the inhibitory nerves furnished to the vertebral artery from the ganglion.

Having established this relationship anatomically, it seems impossible not to observe the analogy existing between the shock propagated from a contused brachial nerve to the vertebral artery, with *its* concomitant vertigo, and the lesser shock caused to the nerves of the stomach by the lumps of unchewed meat swallowed by the toothless patient, and propagated thence to the same vessel and attended with the same condition, viz., giddiness. *Mutatis mutandis*, the cause, the method, and the result, are one and the same thing; the experiment is the same; the conditions only are varied. Hence it would seem that nature had in the labyrinth erected a signal box in which a note of warning might be sounded by the much abused, though tolerant, viscus, the stomach, whenever the ill treatment it is subjected to threatens to compromise more vital parts of the organism. It would seem to teach us what the acquired wisdom of advancing years so often fails to do, that the senile stomach is not the fit receptacle of unmasticated meat; that it resents the slight shown it in this, and, of course, in many other ways; first of all by the warning attacks of giddiness, which, if not heeded, will shortly culminate in a fall. It was by such a catas-

trophe that the Duke of Wellington lost his life—the unseathed hero of a hundred fights failed to prove himself master of the situation when the forces arrayed against him were a vigorous appetite and an acutely sympathetic labyrinthine circulation.

These observations naturally lead us to infer that the doubts which instigated Trousseau to ask himself the question, whether “the treatment which in these cases he directed against the affection of the stomach was not, unknown to him, addressed to the nervous system,” were well founded. The fact is it was directed to both. By resting and restoring the digestive apparatus, he appeased those waves of excited vaso-motor sympathy existing between this viscus and the important tissue tracts supplied by the vertebral artery.

The establishment of a communication between the inferior cervical ganglion and the viscera through the pneumogastric nerve suggests an explanation of some other phenomena which frequently accompany indigestion, but which occur in distant organs. As, however, they are not vertiginous in their character, we shall only glance at them in passing. One of these is *shoulder-tip pain* and pain in some other region of the shoulder, which is popularly associated with indigestion or liver derangement. Explained by the facts we are considering, this pain would mean that a morbid impression has been reflected from any portion of the primæ viæ to which the pneumogastric is distributed to the lower cervical ganglion, through the channel above indicated. Thence it is passed to the plexus proceeding from the ganglion for distribution over the subclavian artery and its branches, which plexus constitutes the inhibitory nerves of this section of the circulation, including the *vasi nervorum* of the brachial nerves. One of these nerves, the supra-scapular, is unique in its course, inasmuch as it passes beneath the ligament of the notch of the spinous process in its course to the muscles of the dorsum of this bone (*supra* and *infra* spinati), in which confined position a very little swelling will be appreciated as pain in its terminal branches. This amount of swelling will be afforded, as we have had frequent occasion to see, by the dilatation of the *vasi nervorum* when their inhibition is suspended; an effect which happens as the result of the impression conveyed from the stomach. Of a similar character and origin doubtless is the pain in other brachial nerves, which frequently is associated with indigestion, also occurring in heart lesion, whether functional or organic, the association in this case being derived through the cardiac nerve. *Hiccough* may own a corresponding origin through irritation of the phrenic nerve by dilatation of the *comes nervi phrenici*, inducing spasm of the diaphragm. Such a relationship receives corroboration from the case of an aged patient, who suffered from vertigo and illusions, with constant hiccough, which would last for days together. In this instance also bromide of potassium afforded great relief. That motor excitement, as well as sensory derangement, should result from the

conditions under review is instanced by a patient of, I believe, Dr. Gower, in whom automatic movements of the arm were associated with labyrinthine vertigo from disease of the middle ear. That these various and distant tissue tracts are really correlated through the medium of the ganglion in question receives confirmative evidence from the effects of certain drugs. Thus tobacco will produce giddiness, tinnitus, nausea, precordial distress, and *aching in the arms*, among other conditions, indicating its progressive influence over the centres of the sympathetic system. Quinia, again, in large doses, produces giddiness, tinnitus, and occasionally, in extreme cinchonism, such trophic changes in the upper extremity that the cuticle will be shed like a glove. Both these drugs, therefore, may be viewed as having a paralyzing influence over the inhibition of the lower cervical ganglion. The bromides, and notably hydrobromic acid, have an opposite effect, because they annihilate the aural symptoms of quinia, cure labyrinthine tinnitus; coupled with suitable diet they remove stomachic vertigo, and have proved highly serviceable in a case of associated hiccough. They have, moreover, a now well-established therapeutic relation to epilepsy. But the fact that the treatment of epilepsy, however conducted, is greatly influenced by the diet, that the absolute withdrawal of solid food immensely expedites recovery—a circumstance which I have repeatedly proved—this fact, we say, pointing to a direct influence between the innervation of the stomach and the condition of tone of the vertebral artery, is strongly confirmative of the reality of the correlation advocated in this paper.

From the foregoing remarks it will be seen that we have in the inferior cervical ganglion an organ for connecting the upper extremities, the heart, the stomach, and upper portions of the digestive apparatus with the labyrinth. These relationships, in all probability, by no means exhaust its range of influence, but they suffice the objects of this discussion. The ganglion in question brings these widely separated regions into very intimate sympathy, by virtue of its regulatory power over the blood supply of the labyrinth and of its afferent and efferent branches to the organs referred to. Returning to the case of the toothless patient, who suffered from *vertigo* whenever he partook of solid food, we take the following to be the course of events in this, as probably in all cases of giddiness which originate in the stomach. The ingestion of the irritant gives rise to an impression which is conveyed along the channel already indicated as forming a communication between the pneumogastric nerve and the inferior cervical ganglion, whence it is reflected to the vertebral artery in the shape of a wave of diminished inhibition. This is equivalent to an increased flow of blood to the labyrinth with corresponding pressure on the endolymph. This pressure physiologically interpreted means giddiness, so far as it relates to the semicircular canals, and when, as usually happens, the circulation of the cochlea also becomes hyperæmic, there is concomitant tinnitus of a more or less pulsating character. If the vascular dilatation

admits of effusion of serum deafness is superadded, and if the exudation partake of the more solid particles of the blood, so that a clot is formed, the deafness may be permanent. In the milder occurrence the impression will be transitory, passing away with the removal of the exciting cause.

It is to be noted that the labyrinth is placed at the extreme periphery of the tract supplied by the vertebral artery; it will therefore be the first to appreciate the consequences of the wave of suspended inhibition communicated to it from the ganglion. The phenomena it occasions under these circumstances are of such a marked character that they cannot fail of attracting the patient's notice: whether the impression originate in the heart, the upper extremities, or the digestive organs; the first note of warning is thus usually struck in the labyrinth. We are therefore justified in regarding this organ as possessing a sentinel-like office to warn the subject of changes of blood supply about to happen throughout the whole of the important regions supplied by the vertebral artery, such, for instance, as the medulla oblongata, and the contiguous nerve centres at the base of the brain. Hence epilepsy and apoplexy may be about to supervene; the *petit mal* of the former disease being the signal note of the labyrinth, betokening the condition of its circulation, and suggesting the search for sources of suspended nerve inhibition.

In the disturbance of some one or more of the multitudinous sympathies thus imperfectly sketched will be found an explanation of the occurrence of those *simple attacks* of labyrinthine vertigo which come on *without any previously existing ear disease*, the desire to understand which furnished the key-note to this paper.

If the argument we have attempted to establish be accepted as proven—or, if not yet sufficiently tested, should it receive ultimate demonstration—a most important fact will become apparent, viz., that the ganglia of the sympathetic system are endowed with the function of *correlating* widely separated organs or tissue tracts. That is, they bring distant regions into such mutual relationship that it is impossible for one of them to undergo any alteration in its normal state without a corresponding change being *ipso facto* set on foot in some more or less distant region with which the vaso-motor fibrillæ of a given ganglion connect it.

ARTICLE XIV.

IS PHTHISIS PULMONALIS CONTAGIOUS, AND DOES IT BELONG TO THE ZYMOTIC GROUP? By W. H. WEBB, M.D., of Philadelphia.

ONE of the most important and interesting questions in connection with phthisis, and one on which great diversity of opinion exists, is that of its contagiousness. From time immemorial this disease has existed, and is justly regarded as the most insidious and dangerous of all pulmonary affec-

tions. It heads the mortality list of nearly every civilized country, and its mode of propagation, therefore, becomes an extremely important subject for study.

In Philadelphia the total mortality, for a period of ten years, from 1867 to 1876, as shown by the Board of Health Reports, was 165,052. Of this 13 $\frac{3}{5}$ per cent. was from phthisis, and of this number 50 $\frac{9}{10}$ per cent. were females, and 49 $\frac{1}{10}$ per cent. were males, showing an excess of 1 $\frac{1}{2}$ per cent. of the former over the latter.

The following case of pulmonary phthisis from contagion occurred in the practice of the writer, and led to the study, the result of which is given in the present article:—

In January, 1874, I was requested to attend Mrs. S., aged 24 years, who was suffering from phthisis; it was found difficult at first to convince her parents, as also her husband, that that was the real cause of her illness, as they stated that, "Consumption was not known in the family of either father or mother, that her maternal grandmother was still living, now a lady seventy-five years old, and healthy in every particular, and that her paternal grandfather, aged eighty-one years, was accidentally drowned about two years ago, while endeavouring to drive across a ford, during high water, of one of the streams of West Virginia. Both families are long lived." On making further inquiry, it was found that during the winter and spring of 1873 she was in constant attendance upon a lady friend who had phthisis, and for whom she had the most fond attachment, and who died in May of that year. Mrs. S. was not married at that time. She died the latter part of March, 1874.

On considering the question of the contagiousness of phthisis it is important to clearly understand what is meant by the term, and there is a diversity of opinion in regard to its definition. We have adopted that of Anglada, of Montpellier, quoted and accepted by Trousseau.¹ "Contagion is the transmission of a disease from one person affected with that disease to one or more persons through the medium of a material cause (*principe matériel*), the product of a specific morbid elaboration: this material cause communicated to an individual in a state of health determines the same phenomena and symptoms in him as were observed in the individual from whom the germ proceeded." Understanding what we mean by the term let us now look at the opinions of the older writers, as well as those of more recent date, in regard to the mode of propagation of the disease in question.

Hippocrates makes no reference to the contagion of phthisis, or to the subject of contagion with regard to any disease, and he is mentioned here because his views exerted a powerful influence over medical thought until the early part of the seventeenth century.

The following authorities have recorded their belief in the contagious-

¹ Clinical Medicine, Philada., 1873, vol. i. p. 457.

ness of phthisis: Aristotle,¹ Galen,² Riveris,³ R. Morton,⁴ Baume,⁵ Cul-len,⁶ Heberden,⁷ E. Darwin,⁸ C. B. Coventry,⁹ S. G. Morton,¹⁰ Bright and Addison,¹¹ Duglison,¹² Andral,¹³ Drake,¹⁴ Watson,¹⁵ Copland,¹⁶ Dickson,¹⁷ W. Budd,¹⁸ Lawson Tait,¹⁹ Walshe,²⁰ T. M. Madden,²¹ and Guéneau de Mussy;²² others holding to the same view, and cited by Dr. Young,²³ are F. Hollmann, T. Reid, Raulin, S. C. Vogel, C. T. Selle, and A. P. Wilson.

In order to ascertain the views of some of the prominent authorities of the present day, the writer addressed letters of inquiry to several gentlemen, and received the following communications in reply:—

Prof. Alfred Stillé states:—

“ I have never seen more than one case in which it appeared to me that the disease was directly communicated. This was of a mother, between fifty and sixty, whose husband many years before had died of consumption. She was herself in excellent, *tough* health up to the date of her daughter's last illness, which was with chronic phthisis with cavities. A day before her death the daughter's breath was very offensive, and the mother, who was lifting her to change her pillows, inhaled it. She spoke to me of the foul taste and acrid sensation in her throat produced by the inhalation. Within a few weeks she began to cough, fell rapidly into consumption, and died after several months' illness. This is the only case of my own that appears to bear upon the affirmation of the question.

“ On the other hand, if pulmonary phthisis were often conveyed by contagion, the cases ought to be of daily occurrence, since the disease is the most frequent of all mortal diseases.

“ While C. T. Williams concludes that the disease is not infectious, the vast experience and sagacity of his father, C. J. B. Williams, led him to

¹ Practical and Historical Treatise on Consumptive Diseases. By T. Young, M.D. London, 1815, p. 121.

² Paulus Aegineta. Sydenham Society, 1844, vol. i. p. 286.

³ Practice of Physic. London, 1668, p. 170.

⁴ Phthisiologia, or a Treatise of Consumptions. London, 1694, p. 67.

⁵ Phthisie Pulmonaire. Montpellier, 1789, vol. i. p. 189.

⁶ Practice of Medicine. Edinburgh, 1790, vol. ii. p. 390.

⁷ Commentaries on the History and Cure of Disease. London, 1802, p. 375.

⁸ Zoonomia. Philada., 1818, vol. i. p. 311.

⁹ U. S. Med. and Surg. Journ. New York, 1835, vol. i. p. 389.

¹⁰ Illustrations of Pulmonary Consumption. Philada., 1837, p. 80.

¹¹ Elements of the Practice of Medicine. London, 1839, vol. i. p. 294.

¹² Practice of Medicine. Philada., 1844, vol. i. p. 365.

¹³ Notes to Laennec's Treatise on Auscultation. Edited by Herbert. London, 1846.

¹⁴ Principal Diseases of the Interior Valley of North America. Philada., 1854, p. 915.

¹⁵ Principles and Practice of Physic. London, 1857, p. 217.

¹⁶ Dictionary of Practical Medicine. New York, 1859, p. 1228.

¹⁷ Elements of Medicine. Philada., 1859, p. 625.

¹⁸ The Lancet, October, 1867.

¹⁹ Amer. Journ. of the Med. Sci., October, 1871.

²⁰ Diseases of the Lungs. London, 1871, p. 452.

²¹ Dublin Journ. of Med. Sci., vol. xl. p. 33.

²² Brit. and For. Med.-Chir. Rev., April, 1870, p. 529.

²³ Practical and Historical Treatise on Consumptive Diseases, London, 1815.

declare that, "both reason and experience indicate that a noxious influence may pass from a patient in advanced consumption to a healthy person in close communication, and may produce the same disease." The latter is my own opinion, and I always feel it my duty to advise that a consumptive's bed should be shared by no one."

Prof. J. M. Da Costa writes me:—

"I have met with a number of instances which seemed to prove the contagiousness of phthisis. I am a believer in this, although I admit the great difficulty of eliminating the law of coincidence in a disease as common as tubercular phthisis. To mention a few of the instances I have met with:

"I attended a gentleman of tubercular family, and himself suffering from very slowly developing consumption, which in truth was arrested for a number of years. He thrice married, and lost his three wives by consumption. The third was a woman of splendid physique, and of a very healthy, long-lived family. She was the mother of three children; one is scrofulous.

"The case of a young woman, 26 years of age, in whose family the patient assured me there never had been a case of phthisis. She died sixteen months after her husband, who had had a slowly progressing consumption. She left two children.

"A similar case in a splendid-looking young woman, who most faithfully nursed a tubercular husband for nearly two years. She died a year afterwards of phthisis, beginning apparently with throat and bronchial irritation. She had, I think, no children.

"A young woman who accompanied her husband to Colorado, where he died a year ago of a slow consumption. She is tubercular now; no case of phthisis has been known in the family except that of her mother's aunt. One of the children of the young widow died of a scrofulous affection.

"I might give you many more examples, and I have noticed the fact that they chiefly happen in women."

J. Solis-Cohen, M.D., writes:—

"I am strongly impressed with the opinion that phthisis can be contracted, that is to say, is communicable rather than contagious in its strict sense, from frequent continuous contact with the phthisical.

"I attended, during a series of ten years, one son and two daughters, all young adults, of a gentleman of this city, and subsequently the father himself, at about the age of fifty years, all of whom died of phthisis under my care. Two sisters of the father died of phthisis also, under the care of another practitioner, both married with several children, probably a dozen or fourteen in all, all of whom are still living, with all the manifestations of phthisis. The father had an aunt, a stout, hale, hearty English woman, who nursed these children when they became sick, often sleeping with them, and subsequently she contracted acute phthisis and died under my care within seven weeks, at the age of about sixty-four, some members of her own family (sisters) surviving her at a more advanced age, and in good health.

"I have also had several cases in which wife or husband died of phthisis several years after the death by phthisis of the other party; in one, and perhaps more instances, after second marriage, in which I have thought, the personal history being unphthisical, that the germ of the disease had been contracted from sleeping with the diseased individual."

Edgar Holden, M.D., of Newark, N. J., writes me that it is—

“My personal observation and belief that persons with consumption may fatally affect those who are long and closely connected with them.”

The authorities who ignore or evade the subject are not many, but include such names as Trousseau and Niemeyer. This is to be regretted, as their large experience and opportunities for observation could have aided materially in settling this important and sadly-neglected mooted question. Others, again, pass it by, by merely stating, in effect, that there is a diversity of opinion in regard to the subject. Still less in number are those who oppose or deny the contagiousness of phthisis; but to this matter we will return after the perusal of a few more original cases which have been kindly communicated to the author; and make a reference to others on record.

Joaquin M. Quilez, M.D., of Cuba, communicates the following case to the writer, and states that he has been familiar, personally, with both families, and knows definitely of their antecedents:—

“A gentleman, whose family was subject to hereditary phthisis, married a strong, healthy, well-developed young lady, in whose family no such disposition existed, and in which no case of phthisis could be traced. A female child, of delicate, though healthy aspect, was the first fruit of said union; a second child, of more delicate health, was born, and died in early childhood. The father, after being sick for some time, died from his hereditary affection; and the wife, whose health had begun to decline, was at last a victim to the same disease.”

A. P. Brubaker, M.D., of this city, has kindly furnished the following case:—

“Mrs. K., aged 33 years, had always enjoyed good health until within the last six months; her parents are living and well. Three years ago she married, her husband coming from a phthisical family; his mother and two sisters, it is said, died of consumption. At the time of his marriage one of his sisters had been ill for a year with phthisis. Mrs. K. attended her constantly for a period of eleven months, when she died. Last August, nineteen months after the death of her sister-in-law, she was seized suddenly with what she called ‘hives,’ followed in the course of a week with fever, slight cough with expectoration, loss of appetite and strength, which gradually became worse; she has lost flesh, and has had slight hemorrhages, in fact all the train of symptoms characteristic of phthisis.”

J. Simpson, M.D., of this city, has kindly communicated the three following cases:—

“Mrs. C., aged 28 years, of a healthy, long-lived family, was in perfect health when married. Her husband died in Iowa, of phthisis. Four months after his death I attended her with slight hemorrhage, dulness was found at apex of left lung but very limited. She died four months after of well-marked phthisis. She was one of thirteen children, all of whom, with the exception of Mrs. C., are living. Her mother died at the age of fifty with some disease of the liver; her father is still living. I attended a grandfather and grandmother, both of whom died when over eighty.

"Mrs. M., aged 30 years, a strong, healthy Irish woman; she nursed her husband, who died of phthisis in the early part of 1877. One month after his death she had a profuse hemorrhage; on examination a spot of dulness was found on the anterior part of right lung. She was under my care four months, the disease spread rapidly, involving the whole of the right and the apex of the left lung. Mrs. M.'s brothers and sisters are all living. She had four children, all strong and healthy.

"Mrs. G., of a healthy family; knew her to be well during her married life. Her husband, whom she nursed for one year, died of phthisis. A month after his death she showed symptoms of bad health, with slight cough; examination revealed disease of anterior portion of apex of the left lung. She died in eighteen months of phthisis."

An examination of medical literature shows that cases of phthisis by contagion have also been recorded by C. B. Coventry,¹ S. G. Morton,² Drake,³ M. J. Guérin,⁴ Condie,⁵ Tait,⁶ Bowditch,⁷ C. W. Stevens,⁸ and Prof. A. Flint.⁹

The author who opposes the contagiousness of phthisis with the greatest force is Dr. Henry Mac Cormac, of Dublin, Ireland. In his ingenious and interesting work,¹⁰ he states that "Consumption is not communicated by any infection or contagion whatever, any more than a fractured limb is so communicated." (p. 109.) Yet he declares, in the most vehement manner, that phthisis is engendered and propagated by pre-breathed air. We will select one sentence, and in doing so it will be, in a manner, giving the text of the whole book. "If we poison the atmosphere with the products of respiration, the atmosphere so empoisoned poisons us in turn." (p. 127.) He thus inadvertently makes himself one of the strongest advocates of the contagiousness of phthisis, as he teaches more than he really meant at the time of writing his book; for it is well known that the effete matter thrown off from the lungs of a person who has phthisis, especially in the advanced stages of the disease, contains, besides the usual effete material, pus and muco-pus; in fact, all the constituents of tuberculous matter. Now, is it not reasonable, if pre-breathed air will produce phthisis, that air loaded with such material as the above would be more likely to cause it, for herein reside the "material cause"?

If tubercle can be communicated by inoculation, as maintained by Villemain,¹¹ Wilson Fox,¹² Marcet,¹³ and others, it proves the existence of a

¹ U. S. Med. and Surg. Journ. New York, 1835, p. 392.

² Illustrations of Pulmonary Consumption. Philada., 1837, p. 80.

³ Principal Dis. of the Int. Val. of N. A. Philada., 1854, p. 915.

⁴ Brit. and For. Med. Rev., vol. ix, p. 340.

⁵ Amer. Journ. of the Med. Sci., July, 1871.

⁶ Ibid., Oct. 1871.

⁷ Bost. Med. and Surg. Journ., 1864, p. 329.

⁸ Ibid., 1875, p. 419.

⁹ On Phthisis. Philada., 1875, p. 419.

¹⁰ On Consumption. London, 1865.

¹¹ Etudes sur La Tuberculose. Paris, 1868.

¹² The Artificial Production of Tubercle in the Lower Animals. London, 1868.

¹³ Medico-Chirurgical Transactions, 1867.

specific morbid matter, and this fact alone would give great support to the disease being propagated by contagion.

The preference that tubercle manifests for the lungs in tuberculosis is in harmony with the law of choice or affinity which belongs to zymotic diseases generally. No one doubts the fact of the existence of typhoid poison in the blood before it is made manifest by a lesion in the glands of Peyer. Nor can we doubt the existence of a like contaminating influence in the blood before we note the peculiar pathological condition known as pulmonary tuberculosis. The tubercle, still preserving the harmony of the general law, is nothing more than the culmination of the process of the disease, the softening and breaking down of which is an inherent weakness of the *materies morbi*, and, being a foreign matter, the lungs rebel against its presence, and make an effort to cast it off. Thus, then, we conclude that the blood is attacked primarily, the disease having a period of incubation or pre-tubercular stage; and that the individual is in a pathological condition prior to the development of tubercle.

The writer of the present article agrees with Dr. P. M. Latham,¹ that "Pulmonary consumption is no more than a *fragment* of a great constitutional malady, which it would be vain to think of measuring by the stethoscope, and which it belongs to a higher discipline than any mere skill in auscultation rightly to comprehend." This accords with a number of diseases belonging to the zymotic group; with diphtheria, where we may only have the sequelæ present, the faucial mucous membrane never being attacked or affected; or again with scarlet fever, without or with but merely perceptible eruption, the sequelæ being most marked; or further still, as we see in some epidemics of smallpox, with cases modified by vaccination without eruption, and know the case symptomatically. Or let us take the disease phthisis itself, some cases, acute phthisis, may run their course in less than three weeks, the disease explodes, as it were, and the lungs are overwhelmed with miliary tubercles; other cases, chronic phthisis, may last twenty years, the disease advancing in a very stealthy manner. All these examples show difference in degree of each individual "material cause." And Pollock² states: "The examination of the aged proves that consumption may exist independently of tubercular development, contrary to the opinions of Louis and Laennec."

It will be noticed that all the original cases in this article are females; this very fact not only proves the correctness of the statement of that distinguished authority, Prof. Da Costa, "that they chiefly happen in women," but also proves that phthisis is a contagious disease; the writer firmly believes that if it were possible for a correct clinical history to be obtained of the females who died of phthisis in Philadelphia in the ten

¹ Clinical Lectures, Bell's Journal. Philada., 1837, vol. i. p. 133.

² Elements of Prognosis in Consumption. London, 1865, p. 135.

years 1867-1876 (50 $\frac{1}{10}$ per cent. of the whole number), it would be found that more than the excess of 1 $\frac{1}{2}$ per cent. of females could be proved to be due to contagion. The reason that women are attacked more often with the disease is readily enough explained by the fact that theirs is the office of ministering angels in the sick room. There are but few physicians who have not known of instances where women have nursed for from six to twelve months in lingering diseases other than phthisis, who were "run down" in health, through loss of sleep, appetite, strength, and became anæmic, etc., from constant attention and anxiety, and yet did not contract phthisis from these causes. It is not to be understood by this that we hold that every woman or man who nurses a case of phthisis will contract the disease, but only that it does occur sufficiently often for the physician to recognize the fact. If there be an hereditary taint—the powder—in the nurse, and if she take charge of a phthisical patient—the spark—there is no doubt that the chances are against her safety; whereas, if she do not expose herself to its further influence, she may live a long life and finally die of some other disease. The writer affirms that there is more danger to be dreaded from nursing the phthisical than there is from nursing cases of typhoid fever; in the latter the "material cause" resides in the excreta, and by cleanliness the contagious element is destroyed and removed; not so in phthisis, for in that disease the "material cause" resides in the effete matter constantly being thrown off from the lungs of the stricken individual, more especially in the advanced stages of the disease.

The late Dr. Cotton,¹ of Brompton, may have said truly that "a residence in the consumptive hospital, and long-continued working in its wards, is a very good way, indeed, *not to catch the disease*," as there is a great difference between the nursing of the phthisical in hospital and in private practice; in the former there is one skilled nurse to probably a dozen or more patients, and they occupy their own apartments after being on duty a portion of the twenty-four hours, and hygiene and regimen are carried out to the highest point of excellence known. Not so in the latter, for here all patients have their own nurses, either some member of the family or friend, who are unskilled, and, as a rule, the circumstances under which they perform their office are such as to render them more liable to fall victims to contagion.

That there must be something more than inheritance to keep up the enormous mortality of this disease, is quite evident from the investigations that have been made by some of the most competent observers. Dr. E. Darwin Hudson, Jr.,² in an elaborate monograph on phthisis, states that "Dr. Cotton analyzed one thousand cases at the Brompton Hospital, and could prove hereditary taint in but three hundred and sixty-seven. Scott

¹ British Medical Journal, 1872, vol. ii. p. 239.

² Transactions of the New York Academy of Medicine, 1876, p. 149.

Allison's observations at the same institution [out of six hundred and three cases he has only seen the influence manifested in nineteen cases]¹ were equally negative. Walshe, by careful inquiry among the phthisical, concludes that not over 26 per cent. have had parents affected with phthisis. M. Pidoux says not over 25 per cent. of those born of consumptive parents themselves become so." The remaining 70 or 75 per cent. must be due to other causes than inheritance, and among these I believe contagion to hold a prominent place.

That phthisis is a contagious disease, and therefore belongs to the zymotic group, the evidence and proof, as herein presented, is, the writer believes, decisive and irrefragable.

633 NORTH SIXTEENTH STREET.

ARTICLE XV.

CHRONIC MUSCULAR SYMPTOMS AFTER TRICHINOSIS. By EDMUND C. WENDT, M.D., of New York.

IN 1872 a number of persons, all members of one family, suddenly fell ill with symptoms pointing to some common cause, supposed at first to have been a noxious substance ingested with some article of food. A series of chance suggestions, among other things, called attention to a ham, some slices of which had been eaten raw, several days previous to the first appearance of illness. Upon examination this ham was found to contain large numbers of trichinae, scattered through its fibres, all in a state of advanced encystation. The diagnosis was thus established beyond doubt, and these cases afforded an admirable opportunity of studying the great variety of symptoms resulting from trichinosis invasion. Accordingly a careful surveillance of the patients was constantly pursued, and all morbid manifestations were diligently observed. A detailed account of the results of this supervision is here uncalled for, but a succinct reference to the most striking symptoms seems indicated.

Briefly then, I may say that the illness was initiated by malaise, nausea (in one case vomiting), loss of appetite, and diarrhoea. Thirst became considerably increased, and fever was developed. In addition to these gastric and febrile symptoms, and after they had lasted about five days, acute muscular pain commenced to be felt. This rapidly increased in severity, and I now observed stiffness and rigidity of the limbs, with a marked indisposition to motion and extreme reluctance to be touched. There was also a certain amount of dyspnoea. In the case of Miss N. B., these

¹ Transactions of the New York State Medical Society, 1871, p. 172.

appearances were intensified by excessive rubeoed, oedema extending over the face and neck, accompanied by redness, heat, and pain principally about the orbital region, with puffiness of the eyelids, tumefaction of the limbs, especially prominent in the lower extremities. (The examination of the urine proved it to contain no albumen.)

In one case a profuse diarrhoea remained for nearly two months unchecked by a generous administration of the usual remedies. Gradually, however, these symptoms abated, the rheumatismoid pains became less severe, the alvine evacuations diminished in frequency, and with the re-appearance of appetite the fever subsided. The sickness had lasted about a month; but the final extinction of pain was prolonged several weeks, and a noticeable weakness remained still longer.

It is evident, therefore, that these patients presented no peculiarity to distinguish their cases from similarly typical ones, and further that the present disease must be grouped under the head of moderately severe attacks. In the course taken by this illness, I noticed no departure from the regular series of successive symptoms, such as established by the best authors.

Before proceeding to the communication of what I believe to be so far unusual as to merit publicity, I will specify how I came to discover this irregularity. Going abroad shortly after the above occurrences had transpired, I lost sight of my interesting cases, and would probably have forgotten their painfully noteworthy visitation, had not my own person acted the part of a disagreeable reminder. In this connection it behooves me to state that I have myself undergone all the agonizing torture following and resulting from consumption of trichinous meat. Moreover that ever since my personal intimacy with the parasitical tormentors, I have been subjected to frequent attacks of what I formerly supposed might be muscular rheumatism, but have latterly concluded must be directly connected with trichinosis. The considerations that have convinced me of the accuracy of this view are numerous and weighty, so that at present I venture to assert that trichinous invasion bears an undeniable causal relation to certain phenomena and morbid symptoms, hitherto not clearly demonstrated.

On my return to this country after an absence of nearly five years, I made inquiry as to the condition of health enjoyed by my former patients, and to my surprise I was informed that they were all troubled with occasional attacks of rheumatism. Upon further examination I ascertained that their "rheumatic trouble" dated from the year of the trichinous infection, and that prior to that time similar pains had never been experienced by any one of their family. This in itself may appear neither strange nor unusual, as records of "rheumatism" occurring in all the members of one family have not unfrequently been made. But when I make use of the term rheumatism, it is simply borrowing the expression employed by my patients. A careful study of their symptoms reveals some

unmistakable deviations from the morbid aspects of a typical muscular rheumatism.

Resuming then the consideration of these symptoms, I may describe the most prominent one as consisting particularly in a certain amount of painfulness. Located exclusively in various groups of muscles, this painfulness is at times heightened so as to render the parts exquisitely sensitive. In this deplorable condition, even very moderate pressure is productive of severe suffering, and the patient anxiously seeks to avoid all contact of the aching regions with the outer world. Happily this state of affairs is of comparatively short duration, rarely lasting over five or six days. When it has disappeared it is frequently superseded by long intervals free from pain. In this respect, I find no dependency on changes of weather or climate; and equally at all seasons of the year there exists a marked tendency to acquire "*painful spots*" or "*sore places*." Sometimes, and especially after prolonged muscular exertion, the strained parts will *suddenly* begin to ache, and occasion intense dolor. Quickly as it came the pain may then vanish and leave no trace behind it. At times, however, it will decline only gradually, lingering here and there, and imperceptibly dying out. (The latter course is less frequently taken than the former.) Then again an extremely annoying sensation may *slowly* develop itself. This, also seated in the muscles, is evinced as an irksome tension, difficult of description. Still it may be characterized sufficiently by its manifest resemblance to the disagreeable feeling of the young, popularly called "*growing pains*." My attention was directed to this point by a spontaneous statement on the part of my patients, after I had previously arrived at a similar conclusion regarding my own personal experience of this sensation. That such growing pains should occur in adults seemed paradoxical, and accordingly "rheumatism" was again resorted to as an appropriately extensive appellation, including in the wide scope of its significance all painful sensations of a dubious kind.

Now and then there exists only a certain tenderness to touch, and this may continue unchanged in its peculiarity for weeks at a time; occasionally shooting pains will arise and extend over large muscular regions, and again at other times the pain (generally felt in a definite quarter) may be difficult to localize, rapidly shifting from one place to another, and attacking in succession many different points. Thus, for example, a dull, heavy sensation around the fleshy insertion of the quadriceps may have existed for some time, when suddenly violent twinges upwards to the hip will be felt, or a pungent pain in the gastrocnemius abruptly extends downwards to the foot. From the sterno-cleido-mastoid to the pectoral or deltoid region, and thence to the arm and forearm, from the neck down the back to the gluteal region and similarly elsewhere, this aching frequently presents itself. Still the organic function of the muscles is not permanently impaired; but, since any violent exertion may be followed by such harassing

results, there exists an uncontrollable reluctance on the part of the patients to engage in active exercise, and this leads to a certain deficiency of muscular action. It is not surprising, therefore, to find the muscles rather flabby and wanting that elastic rigor which characterizes the healthy, normally active organs.

A doughy condition of the muscles, such as exists in the present cases, may not be an exceptional occurrence long after the acute symptoms of trichinosis have ceased to torment patients, but similar observations have scarcely ever been recorded. Indeed, if I except two cases, in some points not unlike those engaging our attention, I may safely assert that the numerous publications bearing on this subject, elaborately prepared as many of them undoubtedly are, contain no mention of analogous symptoms. A condensed extract of the important points in these cases I insert here. The first of the two is interesting in many respects, and has been extensively commented upon by Virchow¹ and other pathologists.

"A German lady, Miss Th. N., emigrated to this country, where in 1856 she (as also her mother and brother) was dangerously ill with the symptoms of trichinosis. Since that time she complained of decided weakness, mainly in her fingers. Manual operations became difficult and fatiguing. She had formerly been quite a virtuoso on the piano, and had always possessed great nimbleness and dexterity in the performance of needlework. These accomplishments she had lost and subsequently never regained. In 1864, she died in the hospital of Altona (Germany), having previously undergone operation for cancer of the breast. The autopsy revealed large numbers of encysted trichinae in her muscles. The capsules were cretified, but the parasites still alive and capable of growth and reproduction. The second case² is that of a butcher, well developed, strong, and healthy, who retained after trichinosis an excessive muscular weakness, which made him unfit for military service. The former facility for performing all actions requiring muscular power had lastingly disappeared, and his original force of body had so far diminished that walking was no longer an easy undertaking."

Similar observations are not recorded elsewhere. The large majority of authors on trichinosis claim to have seen either *complete recovery*, which would seem to be the rule, or *death*, apparently the exception. The fatal termination may result from various acute inflammatory processes engendered by the irritating presence of the worms. Secondary degenerations and numerous complications brought on in this way may likewise be a more remote cause of death. Thus, for example, cases of extreme emaciation with complete exhaustion of all vital energy are not uncommonly found in the literature of this disease. But that the trichinae, having undergone encystation, may still be the source of pain and suffering, that for years and years their presence in the muscles of the afflicted individuals may give rise to disagreeable if not serious symptoms is, to my knowledge, nowhere intimated. Yet such would appear to be the case when we consider the facts before us.

¹ Virchow, die Lehre von dem Trichinen, Berlin, 1866, p. 39. Also Groth, in Virchow's Archiv, vol. 29, 1864, p. 604; and Timm, *ibid.* vol. 30, p. 417.

² Rupprecht, Rundblick auf die Trichinen literatur. Vienna, 1866.

I think, moreover, that this is by no means extraordinary. On the contrary, it seems marvellous that similar consequences should never have been anticipated. Are the symptoms described above not precisely what might be expected as the necessary result of a multitude of foreign bodies occupying the muscular system? In order to see our way clearly, let us call to mind what takes place when the trichinae pierce the intestinal walls, and, having penetrated different tissues and organs, finally arrive at their ultimate destination—the muscles.

We know that as soon as the parasites have found a voluntary muscle, they perforate its elastic sheath, and apparently despising a permanent occupation of the interstitial connective tissue, enter the fleshy fibril itself. There they continue their migration until some obstacle is interposed in their way. The greedy worms consume the contractile substance of the fibril; thus only the sarcolemma is spared. It is clear that an acute myositis must follow. About this time the patients complain most of excruciating muscular pain, and the fever is at its maximum height. The microscope now shows a complete transformation of the affected fasciculi. The transverse and longitudinal striae no longer appear, the sarcolemma contains a molecular mass accumulated around nuclei, and these have become considerably increased in number.

When the worm has chosen its resting-place, and coils itself up, a reactionary inflammation of the surrounding fibres takes place. The sarcolemma in the immediate proximity to the parasite becomes thickened, which action initiates the formation of a capsule. The latter, some time after its completion, undergoes the well-known phenomenal change of cretification, so that the whole cyst becomes a chalky mass inclosing living parasites. Subsequently, even the worm may be transformed into calcareous matter, but the exact time when this ultimate result is accomplished has not been hitherto ascertained. Middeldorp¹ states that he has observed living worms after a period of encystation in one case of twenty-four years.

Here undoubtedly the muscles still contain hard chalky particles, scattered through their fibres, and the harpoon will easily demonstrate this fact. Now even an *à priori* consideration of this state would make it appear strange that the continual presence of innumerable foreign bodies in the muscles should be unattended by any perceptible modification of functional activity or normal sensation. No doubt the individual corpuscle is too small to cause appreciable disorder, but the accumulated effect of the sum of all these granules must be expected to produce discernible changes. Grains of sand disseminated through organs endowed with vital contraction, and supplied by sensory nerves, would presumably give rise to peculiar sensations. In face of these considerations, any positive observation of such effects must more than counterbalance the negative statements of authors.

In his *Traité des Entozoaires* (Paris, 1878), Davaine devotes thirty-six pages to the discussion of trichinosis and its well-marked morbid anatomy. On page 759, he says, "les trichines ne causent donc des accidents que par leur présence dans l'intestin et par leur invasion dans les chairs. Ces accidents sont essentiellement passagers. Lorsque les parasites se sont logés dans les fibres musculaires et qu'ils sont séparés de l'organisme de leur hôte par un kyste, ils y restent indéfiniment inoffensifs." This enunciation might lead one to suppose that there exists some specific virus which makes the trichinae particularly offensive; and that as soon as they become "separated from the organism of their host by a cyst," no further symptoms are experienced, and the animals imprisoned within their capsules cease to be an object of danger or even pain.

I admit that the *greatest danger* is over as soon as encystation commences. But, on the other hand, I hold that the capsules are liable and likely to cause painful symptoms for a period of indefinite length. Of course, we are at liberty to say that it is not the parasite, but rather its calcareous envelope, which brings about the abnormal sensations explained above.

The condition described is one of *chronic myositis with acute exacerbations after trichinosis*. This definition seems in every way sufficient and satisfactory, accounting for all the symptoms in a rational way, and removing the questionable disease from the field of obscure conjecture to the safe grounds of morbid anatomy and scientific pathology. It no longer appears surprising that the painfulness should be confined to the muscles; that it should show a marked predilection for those very regions which, in the primary acute attack, had suffered most (*i. e.* the flexors of the extremities); that its coming and going should be controlled by no regularity; and that when it has disappeared, weeks and months may elapse before it returns.

ARTICLE XVI.

WOUND OF THE TRACHEA; BLOODY EXPECTORATION AND EMPHYSEMA FOLLOWING; TRACHEOTOMY NOT PERFORMED; RECOVERY. Communicated, with Remarks, by WALTER F. ATLEE, M.D., of Philadelphia.

IN the number of this Journal for January, 1858, a case, supposed to have been *Rupture of the Trachea*, is reported, that occurred in the practice of my brother, Dr. J. L. Atlee, Jr., of Lancaster. Two quite similar cases, in one of them the larynx being the seat of the injury, which were all that could be found recorded of this rare injury of the air-passages, were also related in the communication, and the opinion was given that when the true nature of the accident was ascertained, and emphysema became extensive, tracheotomy should be at once resorted to.

Several years afterwards (April, 1866), on the occasion of a case that occurred in his own practice in the Pennsylvania Hospital, Dr. Wm. Hunt contributed to this Journal a most valuable article on injuries of this kind, entitled "On Fractures of the Larynx and Ruptures of the Trachea." Including his own, Dr. Hunt collected as many as twenty-eight perfectly authentic cases, and with this quite considerable experience this distinguished surgeon wrote as follows: "I think our list shows that active and prompt treatment by *laryngotomy* or *tracheotomy* gives the only hope of success when the emphysema and bloody expectoration show that the mucous membrane has been lacerated by the broken fragments. . . . If then, after getting the history of a case, we have bloody expectoration and emphysema accompanying the other symptoms, an operation should at once be performed, *for we have obtained no record of such a case getting well without it.*"

Since Dr. Hunt's article there have been several contributions about these injuries in this Journal. In the number for January, 1867, is a case where death followed a wound made by a fragment of shell that passed through the floor of the mouth, producing a severe compound fracture of the inferior maxilla, and obliquely over the neck to the middle of the right clavicle, which was broken (compound fracture). Emphysema, difficulty of breathing, and extinction of the voice followed, and death took place on the sixth day. At the autopsy, to the surprise of all, the cavity of the chest was found uninjured; but the right wing of the thyroid cartilage was found fractured.

In the following number (April, 1867) is a case that is particularly interesting from its having been presented and commented upon by so high an authority as Dr. F. H. Hamilton. The patient died two hours and a half after the receipt of a kick over the larynx. The cricoid and thyroid were both fractured, and there was extensive infiltration of blood underneath the laryngeal mucous membrane, filling the larynx. Dr. Hamilton says that it is very apparent that an operation might have saved the patient's life. He also refers to another case of fracture of the cricoid and thyroid cartilages, on which he operated, with entire relief to the symptoms of suffocation, though the patient's life was not saved, probably on account of injury inflicted to the lungs before the operation in violent struggles for breath.

In April, 1868, a case (from the *Gazette des Hôpitaux*) of traumatic fracture of the larynx, caused by pressure with the hands in a quarrel, is related by Dr. Fredot. The patient did well until the third day, when he suddenly fell dead. The sudden death seemed to have arisen from the displacement of one of the fragments of the cricoid and the corresponding arytenoid, which, riding on the other, completely obstructed the passage of air. Having noted the principal facts of the few cases that are on record, Dr. Fredot observes that they may be divided into two categories

as regards treatment. "In the first, the affection is so slight as hardly to attract the patient's attention, and then silence and rest suffice.¹ In the more complicated cases the injury may induce death before any treatment can be put into force; or they may be accompanied by dyspnoea, cyanosis, convulsions, aphonia, tumefaction, or deformity of the neck, emphysema, etc.; and as death may be produced at any moment by displacement of the fragments, or by oedema of the glottis, the surgeon should, even when the symptoms are not very urgent, at once practise catheterism of the larynx, or, better still, tracheotomy. Had this been done in the case related above, the patient's life would probably have been saved."

In the number for July, 1869, is a case from the *Dublin Quarterly Journal* for May. The subject was a female, who had received a kick in the throat from her husband, dyspnoea came on soon afterwards, which increased rapidly in intensity, so that she died before Mr. Wm. Stokes, Jun., who had been sent for to perform tracheotomy, could reach her. At the autopsy, a double fracture of the cricoid cartilage was found, with displacement inwards of the left fragment, and displacement of the arytenoid on the right side. There was no laceration of the mucous membrane of the larynx, and consequently no emphysema. The glottis was almost completely occluded by blood effused beneath the mucous membrane, especially under the aryteno-epiglottidean folds, and in the ventricles. All the soft tissues about the larynx outside were profusely infiltrated with blood, although no laceration of a large vessel could be determined.

Mr. Stokes relates a similar case that occurred in the practice of Maisonneuve, where the patient recovered after tracheotomy; being obliged, however, ever after to wear a tube, on account of contraction of the larynx. He says that this successful result makes it an unceasing source of regret that he did not arrive at the hospital sufficiently early to perform the operation, and in all probability save the life of the patient.

The last case recorded in the *Journal* is in the number for October, 1871, taken from the *Centralblatt f. d. Med. Wissenschaften*. The subject was a soldier, who was kicked in the anterior part of the neck, and who afterwards had cough, tracheal râles, but no bloody sputa, with tolerably extensive emphysema of the neck. From these symptoms the diagnosis was a *transverse rupture of the trachea*. This patient appears to have recovered without an operation, but the account given is not quite satisfactory. It is there stated that *Garlt* has found recorded cases in which there was a solution of continuity from accident in the walls of the trachea; in five the wound was accompanied with fracture of the thyroid

¹ It may be followed, however, after a long time by local inflammation and abscess. In one case, which I witnessed, an abscess forming twenty months after the injury. See *Nélaton's Clinical Surgery*, from Notes taken by Walter F. Atlee, M.D., Phila., 1855, p. 122.

cartilage. In one only of those cases was there a favourable termination, and then only after a resort to tracheotomy.

I have called attention to these cases for several reasons; they show, I think, that in severe injuries to the *larynx* tracheotomy should be resorted to without delay; that death is caused by obstruction from effusion of blood under the laryngeal mucous membrane, or by displacement of the injured laryngeal cartilages; and they do not show, as writers on surgery often say, that emphysema is a dangerous complication, calling for tracheotomy, perhaps, not even for scarifications.

Wounds of the *trachea*, therefore, so far as the peculiar threatening to life is concerned, and the urgent necessity of surgical interference, must differ from those of the *larynx*. They have certain things in common, but not enough to allow them to be treated together, as is generally done in works on surgical practice. They should be separated, as well as those affecting the bladder and penis.

Emphysema is a phenomenon that may occur in any case where there is wound of the air-passages below the glottis. When there is not parallelism between the opening in the air-passages and that in the skin, the air expelled in expiration is pushed into the cellular tissue. When the larynx is wounded, it is said that the glottis may be so constricted by emphysema extending through the submucous tissue as to cause suffocation. (See Holmes, *System of Surgery*, 2d edit., vol. ii. p. 443.) This, of course, would not occur in a wound of the trachea. It has been said that the action of the phrenic nerves may be so interfered with by emphysema as to lead to a fatal result. This I cannot credit. That first-rate authority, Hamilton, when treating of fractures of the ribs, says: "Emphysema is present in a pretty large proportion of cases. It has been observed by me in ten out of eighteen cases." "In one case it extended over nearly the whole body." "The emphysema generally demands no special attention, since it is usually too limited to occasion inconvenience, and when more extensive it generally disappears spontaneously after a few days, or a few weeks at most. The advice given by some surgeons that we ought in these cases to cut down to the pleural cavity, so as to allow the air to escape freely through the incision, seems thus far to have rested its reputation upon a more than doubtful theory rather than upon any testimony of experience." From the cases referred to by Hamilton, it would appear that, when incisions were made to relieve the emphysema, the patient died, and that when the patient was let alone, although the emphysema was so extensive as to extend over the whole body, and even to close the eyes, the patient got well. (*Practical Treatise, etc.*, pp. 176-7-8.)

The case calling for these remarks, which, although lengthy, cannot be judged unnecessary by any one who should consult special or general works on surgery for assistance under similar circumstances, is as follows:—

Lucien P., a healthy, lively boy, seven and a half years of age, while amusing himself with a pair of scissors, pointed in both blades, found them working rather stiffly, and reaching to seize an oil-can, he tripped and fell in such a way that the points of the closed blades punctured the neck over the second ring of the trachea. The wound was longitudinal, three-tenths of an inch in length, and five-tenths in depth. His father, who saw him a moment afterwards, described him as "covered with blood, oozing out of his throat." He sent at once for the nearest physician, and carrying the boy to the bath-room, washed the wound, and applied at once a piece of folded linen soaked in *phénol-sodique* to stop the hemorrhage, and tried to pacify the child as well as he could; for he noticed that while crying some air escaped from the wound with the blood. The *phénol* stopped the bleeding almost instantly, and the child became more quiet. For a short time he spat up some blood, but this only lasted for a few minutes. When Dr. Porter saw the patient, very soon after the injury, he found him with the symptoms of severe shock, with some slight emphysema near the wound, but quiet and breathing regularly. This was the condition of things an hour or more afterwards when I reached the house.

In the course of the following night, the poor boy, while vomiting to relieve his stomach of undigested food, imprudently given, forced the air in a few moments into the cellular tissue of the face, neck, and front of the chest, to the utmost possible extent. As the weather was suitable for such an observation, being damp and cold, so that the *breath could be seen*, I was much struck by *seeing* with what violence the air is expelled from the chest, in the expiratory effort made after strong and repeated strainings to empty the stomach. When called this time, I took with me the necessary instruments for the performance of tracheotomy; but after some hesitation, and with the concurrence in opinion of Dr. Porter and Dr. Hodge, whom it was my good fortune to meet in consultation, it was concluded to be the best to wait, using at the same time means to keep the patient very quiet, and to prevent any commotion of the stomach. Full doses of chloral hydrate, with bromide of potassium, were given at regular intervals to assist in this, so that for a couple of days the child was almost constantly asleep. The wound healed quickly, the emphysema gradually disappeared, and, after a confinement of ten days, to guard against inflammation of the air-passages, the patient was allowed to go about as usual.

While looking over works on Surgery, I came upon the following case in Ambrose Paré (*Œuvres Complètes*, par Malgaigne, liv. 8, chap. xxx). In his chapter on *Wounds of the Neck and Throat*, he relates the following history (as worthy of being left to young surgeons)! It is, in the original, one of the most charming cases I know of in surgical literature.

"In the year 1574, on the first day of May, François Brege, pastry-cook of my Lord of Guise, was wounded in the neck by the blow of a sword, at Joinville, cutting a part of the windpipe and one of the jugular veins, from which issued a great flow of blood, and from the windpipe a *chifflement*. The wound was sewed, and astringent remedies applied; and soon afterward the wind that went forth from the wound entered into the fleshy skin and the *space* of the muscles, not only of the neck, but also of the whole body (like a sheep that has been inflated to be skinned), and he could not articulate in the least. The face was so swollen that not any appearance of a nose could be seen nor eyes. Seeing the symptoms, all the assistants concluded that Brege had more need of a priest than a physician, and consequently extreme unction was administered to him. On the next day my Lord de Guise commanded master John Lejenne, his physician-in-ordinary, accom-

panied by Mr. Bugo, celebrated physician of Madame, the Dowager of Guise, together with James Girardin, master Barbier, the physician in the town of Jeinville, who having seen him, the said physician was of the advice to leave him, despairing of any remedy, and not finding the pulse of the arteries beating in any manner on account of the great swelling of the skin. Lejeune not wishing to leave him without having tried something, and like a bold operator, through the good experience he had from a quick mind, was of the opinion to try an extreme remedy, which was to make several scarifications pretty deep by which the blood and the ventosities were permitted to escape. At last the pastry-cook recovered his speech and sight and was shortly afterward entirely cured by the grace of God, and is now living and doing service to my Lord of Guise in his office of pastry-cook."

ARTICLE XVII.

REPORT OF SIX CASES OF CONTAGIOUS VULVITIS IN CHILDREN.

By I. E. ATKINSON, M.D., of Baltimore.

PURULENT discharges from the external genitals of female children are sufficiently common to fall under the notice of every practitioner. Almost all of these cases occur in children who may be recognized as scrofulous or tuberculous. There are cases, however, where the vulval mucous membrane becomes inflamed in consequence of irritation from the presence of ascarides in the rectum, or, as has been claimed, from dentition, or from scarlatina, or possibly from other zymotic affections; finally, irritation directly applied may occasion the inflammation.

The importance of a correct etiological understanding of such cases has long been recognized by medical writers, on account of the relation they are apt to have with questions of medical jurisprudence. While it is desirable that the profession should be informed as to the occurrence of this inflammation in consequence of systemic conditions and of reflex and simple direct irritation, it becomes all the more essential to entertain correct ideas regarding those cases where the simultaneous existence of the disease in several individuals dwelling together makes it certain that there is a common cause; almost certain that they are due to a specific contagious principle. This consideration has induced me to report the following cases of vulvitis occurring in a charitable institution of this city, of which I have partial medical control.

CASE I.—Mary N., aged twelve years, was first seen by me June 5th, 1876. She had never menstruated; was of good physique and free from appearance of scrofulous taint. The notice of the attendant was attracted by her awkward gait. When questioned, she complained of having been unwell for several days with pain in the lower portion of her abdomen, and much distress in micturition. She had a free discharge of thick, yellow, sticky pus from her vulva, which was of a raspberry-red colour, and oedematous about the labia majora. The vaginal orifice was minute.

CASE II.—Mary C., eight years of age, small and frail, but healthy

since her residence in the institution, was also first seen by me June 5th. She had no pain upon micturition, but there was tenderness and deep redness about the vulva, with, however, not very much discharge. She said she had been thus affected for several days before coming into the infirmary.

CASE III.—Ida McM., five years old, of small and delicate frame; was in the infirmary June 1st, with diarrhoea. She was discovered to have vulvitis June 5th. She had not slept in the same room with the other girls for at least six nights. There was no pain upon micturition, but the discharge was more copious than in either of the other children.

CASE IV.—Laura W., aged five years, had, June 6th, a vulvitis of considerable intensity. She has a stiff hip joint from coxalgia.

CASE V.—Hattie S. had, June 8th, a free vulvo-vaginal discharge, with considerable oedema of the labia, and an erythematous condition of the surrounding integument.

CASE VI.—Eva H., a stout, hearty girl, had a moderately intense vulvitis, with slight purulent discharge and deeply reddened mucous membrane. Pressure caused a small quantity of pus to flow from the vaginal orifice.

The course of the disease in these children was not in any way remarkable. Upon admission they all looked pale and badly. In all of them there was slight but steady elevation of temperature, varying from 99° F. to 101.5° F., the latter figure being reached by only one of the girls, who then had some anorexia and vomiting, and whose vulval mucous membrane was partially stripped of its epithelium. One child, Eva K., was discharged cured June 23d, but the others were under constant attention until August 1st, when they were allowed to return to their dormitory.

As will be observed, the treatment of these cases proved very tedious. When first coming under observation, they were ordered cod-liver oil and the citrate of iron and quinia, in full doses, internally; and as external applications washes were used, each for more or less protracted periods, and in regular succession, consisting of solutions of the potassio-tartrate of iron, of alum, of carbolic acid, of hyposulphite of soda, and of acetate of lead, accompanied or followed by salicylic acid and oxide of zinc in powder. Decided improvement was not obtained until a solution of nitrate of silver, from one-half to one-third of a grain to the ounce of distilled water, was employed. From this time the improvement was rapid.

Immediately upon the discovery of the disease in the first of these children, a rigid investigation was made throughout the institution, with the result of discovering no more than those mentioned affected. These six children all slept in the same dormitory, a large oblong ward, in which there were nineteen single beds, all occupied. Close questioning elicited the information that during the night the girls would creep occasionally into bed with each other, and one of the children confessed that some of the larger girls were in the habit of titillating the genitals of the smaller ones with their fingers, buttons, sticks, etc. Now, the mere fact of the titillation would not suffice to account for the sudden outbreak of vulvitis

in these girls; it would, however, be sufficient to prove a ready manner of conveying a contagious principle from one child to the other, could such a principle be supplied.

For a year or eighteen months past the institution has been, from time to time, pervaded by a contagious ophthalmia, which has almost baffled the careful efforts of the officers. During its prevalence nearly all the inmates, including some of the attendants, have been affected, and the most careful isolation has served to do hardly more than check the malady temporarily. At the time of the appearance of the vulvitis, two or three cases of conjunctivitis were in the infirmary. Coexisting with the ophthalmia there have been an unusual number of cases of catarrhal and ulcerative stomatitis, and upon two or three occasions so many children were affected that Dr. Tiffany, who at the time was in charge, was convinced of the contagious nature of the disorder, and attributed its origin to the ophthalmia. In a like manner I am persuaded the discharges from either the ocular or buccal mucous membranes were conveyed to the vulval mucous membranes of my patients, in some manner, most probably upon the fingers of some of the girls, and was the active cause in the production of the vulvitis.

The potentiality of the products of inflammation of the genital mucous membranes to induce by contact severe ophthalmias is well known and universally admitted; the contagiousness of catarrhal and ulcerative stomatitis has been claimed in accounting for certain epidemics of buccal inflammation; although, indeed, many writers are unwilling to accept the latter claim as valid. Analogy would seem to justify the view that in a like manner contagium from other mucous membranes may light up inflammations in that of the vulva, a conclusion to which the cases above mentioned would likewise direct us. It is not necessary, in the present instance to search for such epidemic influences as are usually claimed to originate vulvitis in children when widely distributed; for we have a more tangible agent of contagion in the pus that has so successfully carried disease to many persons in the institution during many months; in fact, the origin of the cases is as readily accounted for as if we knew that gonorrhoeal pus had been brought into contact with the vulval mucous membranes of these children, and their interest rests in the circumstance that there was here a vulvitis due to a specific contagion other than venereal. In view of the popular disposition to attribute such maladies in young children to criminal causes, the bearing of these cases is obvious.

ARTICLE XVIII.

A COMMONLY ACCEPTED THEORY IN OPHTHALMIC PHYSIOLOGY DISPROVED BY A CRUCIAL EXPERIMENT. BY HENRY HARTSHORNE, M.D., of Union Springs, N. Y.

HAVING become satisfied by various evidence that the theory usually given in the text-books, on the authority of Helmholtz, to account for what are called *ocular spectra*, negative and complementary, is erroneous, I wish to call the attention of physiologists to a very simple but decisive experiment, whereby it may, in my judgment, be disproved.

The class of facts to be explained may be recalled by a single example. Let any one look for a few moments steadily, under a good light, at a red surface of any kind, an inch or two square. Then let the eyes be turned upon a larger white surface; there will be seen a patch of *green*, of the form of the *red* surface first looked at. What is the cause of this?

The ordinary explanation given is, that, by looking at a red object, the retinal nerve-elements by which red light is perceived become for the time *fatigued*, and so less sensitive than the other portions of the retina; and hence, of the light reflected from a white surface, only the complementary colour to red, viz., green, is seen. In a paper published in the Proceedings of the American Philosophical Society for 1876, I stated at length the experimental evidence which I believe to render it *impossible* for this explanation to be correct. I propose now to mention an additional experiment, by which any one may readily put it to the test of observation.

An hour (or less, with sensitive eyes) before sunset, let any one, having normal sight, look for from five to ten seconds at the sun through a pair of blue or green glasses, such as are worn at the sea-shore or elsewhere to protect the eyes from glare. Then, on *closing* the eyes, there will be visible a spectrum of the sun, of the *same colour as that of the glasses* through which it was looked at. Then let the eyes be *opened* upon a white surface (snow is the best possible), *the glasses being removed*. At once, or very soon, will be seen a spectrum of the colour *complementary* to that of the glasses. Again let the eyes be closed; the *positive* spectrum will return; *i. e.*, of the same colour as that of the glasses through which the sun had been seen. Several times this may be repeated before the spectra fade away and disappear.

Now it appears to me to be self-evident that, if looking at the sun through glasses of a certain colour produced *fatigue* in those elements of the retina by which that colour is perceived, we should not see a spectrum of the *same colour, when the eyes are closed*. That this is not explained by the *resting* of the fatigued nerve-elements by closing the eyes, is obvious; because, when they are opened, a *negative* or complementary spectrum is

at once seen; and this again and again. It is impossible for fatigue to account for *both* positive and negative spectra at the same time; *i. e.*, at successive and alternating moments. Indeed, I consider it impossible that fatigue should explain *positive* spectra at all.

How, then, do we interpret the phenomena referred to? The positive spectrum I account for by the reverse of fatigue; namely, strong *excitement*, and (physically expressed) continued *vibration* of those retinal elements which respond to the colour interposed between the eyes and the sun.¹ The negative or complementary spectrum is to be explained, in my judgment, by the *interference* of the above-named continued retinal vibrations, with those rays of the same colour in the light reflected by the white surface looked upon; so that *only the complementary rays* are seen.

This is, it may be said, a physical instead of a physiological explanation of the facts observed. It exemplifies the large place necessarily awarded, in modern physiology, to physical phenomena and causation. A general statement may be formulated, as follows: *those ethereal vibrations which we know as light, impinging upon the retina, produce in its receptive structure corresponding vibrations*, which are a constant and necessary part of the *mechanism of vision*.

This last expression may seem, perhaps, especially unacceptable just now; when, after the thermo-dynamic theory of Draper, and the electrical hypothesis of others, the observations of Boll and Kühne have recently made popular a *photographic* theory of the function of the retina. But it remains to be proven how far the phenomena which have suggested these different hypotheses may be *concomitant* with, rather than essential to, vision. At all events, any theory of vision which *excludes* the idea of retinal vibration in response to the wave-movements which are known to constitute light, if accepted at all, must be supported by overwhelming evidence; such as has not yet been anywhere adduced.

ARTICLE XIX.

SUCCESSFUL TREATMENT OF STRYCHNIA POISONING BY THE HYPODERMIC INJECTION OF APO MORPHIA. By R. GLISAN, M.D., Professor of Obstetrics, etc., in the Oregon Medical College, Portland, Oregon.

IN the course of twenty-nine years' practice of my profession I have never met with an instance of poisoning by strychnia that has given me in its treatment, considering the quantity of the poison taken, the satisfaction derived from the following case:—

¹ This may be called a kind of retinal *phosphorescence*.

At 3½ P. M. of December 3d, 1877, I received a hasty summons to see Mr. R. C. W., aged 25 years, who was supposed to be dying. On arriving I found him in terrible tetanic convulsions from a dose of the sulphate of strychnia, which he had taken with suicidal intent a short time before my arrival. His legs and arms were extended, hands clenched, feet and toes incurvated, and his body was rigidly arched backward and resting on his heels and the back of his head. In short, all of his muscles seemed to be in a state of rigidity. There were also the *risus sardonius*, and a general cyanosed appearance of the skin.

During the paroxysm the pulse was too frequent to be counted, and his pupils were slightly dilated. Finding it impossible, on account of trismus, and the violence of the general spasms, to administer an emetic by the mouth, or to use the stomach-pump, and having a grain of E. Merck's muriate of apomorphia in my pocket, I injected one-third of it, dissolved in a little water, beneath the skin of the anterior part of his right forearm. In half a minute the paroxysm subsided, and was followed in about five minutes by another of shorter duration and of less violence; during the height of which vomiting commenced and actively continued until his stomach was emptied of its contents.

After the vomiting there was no recurrence of the general tetanic spasms, but an occasional slight contraction of a few muscles, when the patient was touched, moved, or in any way disturbed. He said that he had had several convulsions before I saw him, and that they had increased in frequency and force up to the time of his receiving the hypodermic injection.

After vomiting freely from the action of the muriate of apomorphia, he took in divided doses the following emetic, in order to insure a thorough evacuation of the stomach. Although this additional emetic was undoubtedly superfluous, I gave it because it could do no harm, and might do good. *R.* Pulv. ipecac. ʒij, zinci sulph. gr. x; pulv. sinapis albae gr. x, mixed with a little warm, sweetened water. I also gave him freely a tepid mixture of equal parts of olive oil, milk, and water; thus keeping up the vomiting for about fifteen minutes. The occasional, very slight, and partial spasms that occurred at long intervals only once required any special attention, when I permitted him to inhale a small quantity of ether.

After the entire subsidence of the spasms, or about an hour from the time of my first seeing him, I ordered that half a drachm of bromide of potassium should be given him at 9 P. M., and then took my departure.

On calling the next morning, I found him well, but still feeling some muscular soreness and fatigue, and fully resolved to let strychnia alone in the future. He said that no one could imagine the fearful agony it had caused him, and that he would rather be burnt to death than again suffer the pangs that he had endured from this horrible poison. He told me also that after taking the strychnia he locked the door of his room, and lay down on his bed to die, as he supposed, in a rapid and easy manner. When the spasms commenced they soon put him in such fearful agony that he screamed for help. His cries attracted the attention of a man in a room below him, who ran up and broke open the door, and sent for me.

I do not believe that the one-sixteenth of a grain of apomorphia, the dose usually recommended, and especially by Professor Bartholow, for hypodermic injections generally, would have been of much service in the case of my patient; yet this quantity is undoubtedly sufficient in ordinary

cases of disease, and has even proved fatal in a man affected with "chronic bronchial catarrh and moderate emphysema."¹

About two years ago I was strongly tempted to use apomorphia in an instance of poisoning by laudanum, but the rapidly supervening *narcosis* deterred me from so doing; and I frankly admit a prejudice against its employment in narcotic poisoning generally and in ordinary forms of disease requiring emetics, because of the occasionally dangerous results where vomiting is not produced. But I believe that it is pre-eminently adapted to poisoning by strychnia on account of the twofold action of *antagonizing the rigidity of the muscular system*, and of *promptly relieving the stomach of the unabsorbed portion of the poison*.

Whilst admitting the possibility of the rapid abatement and final cessation of the spasms being simply coincident with, and not the result of, the action of the apomorphia in Mr. W.'s case, yet I have seen a sufficient number of examples of the toxicological effects of strychnia upon the human subject to form a reasonable prognosis in a given instance, and I must declare my firm conviction that death was chiefly prevented by the prompt action of the muriate of apomorphia.

The precise quantity of strychnia taken by Mr. W. could not be ascertained, but was probably about six grains. My estimate is based upon his statement after recovery. A paper, from which he said he took it, was found in his room during the paroxysms, containing a little of the poison. He supposed that there was an interval of about half an hour between the time of taking the strychnia and my arrival.

So far as I know, this is the first case of strychnia poisoning in which the muriate of apomorphia has been used, and I feel confident that this salt will be found, on further trial, the remedy, *par excellence*, in those cases of poisoning by the active principles of *nux vomica*, where a *prompt emetic is indispensable*, and *cannot be given by the mouth*, and where a moderate degree of antagonism is sufficient to counteract the effects of the poison already absorbed into the system.

ARTICLE XX.

BACKWARD (SUBACROMIAL) DISLOCATION OF THE HEAD OF THE HUMERUS;
REDUCTION ON THE TWENTY-NINTH DAY. By P. S. CONNER, M.D.,
Professor of Anatomy and Clinical Surgery in the Medical College of Ohio, etc.

ON the 8th of February, G., æt. 39, a powerful, muscular man of medium height, consulted me on account of some trouble about the right shoulder, which had existed for four weeks, and been treated as a sprain and rheumatism. He stated that on the 11th of January he was sobering-

¹ Medical Record, Oct. 20, 1877, p. 664.

up after a heavy spree, and late in the day fell asleep, but awakened after an hour or two, crying out "Oh! my arm;" and as soon as he was fully conscious, he felt great pain about the right shoulder. A "blue spot" was noticed at the region of the deltoid insertion. The physician who was called in regarded the case as one of sprain, and treated it accordingly. The pain gradually diminished, but never entirely ceased; and the whole extremity continued to be quite powerless; as the patient expressed it, "it was numb, as if it was asleep all the time." Nine years previously this same right shoulder had been luxated; and again three years ago there had been some injury of it, the exact nature of which was not known. Upon examination, at the date above mentioned, I found the arm hanging by the side and rotated inwards, the external condyle of the humerus looking forwards and inwards. There was almost entire inability to lift the arm away from the body, and it could not be rotated outwards. The antero-internal surface of the shoulder was flattened, the corresponding margin of the acromion sharply defined, with a depression below it, and an evident fulness underneath and posterior to its outer border. The distance from the acromion process to the outer condyle of the humerus was $\frac{1}{2}$ in. less, and the circumference around the axilla over the acromion and the prominence postero-externally was over an inch greater than on the sound side.

On the following morning (the *twenty-ninth day* after the receipt of the injury) the man was etherized, and after very considerable effort the head of the humerus was replaced in the glenoid cavity, the reduction being accompanied by a distinct snap, notwithstanding the completely anesthetized state of the patient. At the time of the reduction the extending force was being exerted from above and within, and aided by the direct pressure I was making upon the head of the bone. The after-history of the case presented nothing of special interest, and all bandages were removed at the end of two weeks—the patient keeping the arm quiet for some days longer.

How the accident was produced cannot of course be told, the man being asleep and alone at the time. It is possible, not to say probable, that, recovering as he was from a protracted debauch, the patient had an epileptiform attack, in which the dislocation was produced, either by muscular action or by striking the arm against some part of the bedstead. Muscular action is certainly a frequent cause of the backward dislocation, more than one-fourth ($\frac{8}{29}$ ths) of the cases, according to Malgaigne, having been thus produced, the humerus having been violently twisted inwards.

It will be noticed that I have reported the arm as somewhat shortened. Respecting the change in length very contradictory opinions have been expressed. Sédillot, in the report of his case in which he effected reduction a year and fifteen days after the luxation occurred, says that "the arm, measured from the summit of the olecranon to the outer border of the acromion, was an inch longer than that of the opposite side." Gross declares that the arm is "considerably shorter than natural." Nélaton finds that "the member is longer than that of the sound side," and Follin that there is "ordinarily lengthening;" while Flowers maintains that "the length of the arm is unaltered or but slightly increased," and Panas that

there is "little or no lengthening, sometimes even there has been reported a certain degree of shortening." Many of the standard authorities (among them Cooper, Hamilton, Bryant, Erichsen, Holmes, Ashhurst, Gant) say nothing about the length of the limb.

The rarity of backward dislocation (less than fifty cases being on record) makes it advisable, I think, that every accident of the kind should be reported, especially as it is not infrequently, as in the case I have narrated, mistaken for an unimportant injury or disease of the shoulder. Fortunately, even when such mistake has been made, and considerable time has elapsed since the dislocation, the probability of reduction is greater, and the period of time within which efforts at restoration may properly be made is decidedly longer, than when the luxation is of one of the more common varieties.

CINCINNATI, 122 Seventh St.

ARTICLE XXI.

ON THE PRIMARY ANÆSTHESIA FROM SULPHURIC ETHER.

By JOHN H. PACKARD, M.D., of Philadelphia.

SINCE the publication of my article on the above subject in the number of this Journal for July, 1877, various inquiries have been made of me, by letter and otherwise, in regard to it; and I feel called upon to be more explicit upon one or two points.

As before stated, the time occupied in inducing the first insensibility varies in different persons. In some it comes on almost immediately; in others it is delayed for several minutes. When it is thus delayed, the operator or the assistant may either despair of its coming at all, or assume that it has passed unnoticed.

It must be remembered that this is a distinct stage. Every one knows that patients will often lie so still that they are thought to be insensible; but at the touch of the knife there is instant shrinking and perhaps outcry. The only *reliable test* of this stage of primary anæsthesia is the failure of muscular power, as shown by inability to maintain the hand outstretched. Hence the necessity of watching for this sign; urging the patient to hold up his hand, especially if he tends to lie quietly.

I feel warranted in asserting that this "first insensibility" invariably occurs; that it is absolute and profound, though brief; and that it may always be detected and taken advantage of by careful observation and prompt action.

REVIEWS.

ART. XXII.—*Spinal Disease and Spinal Curvature. Their Treatment by Suspension and the use of the Plaster of Paris Bandage.* By LEWIS A. SAYRE, M.D., of New York, Professor of Orthopædic Surgery in Bellevue Hospital Medical College, New York, etc. Duodecimo, pp. ix., 121. London: Smith, Elder & Co. Philadelphia: J. B. Lippincott & Co., 1878.

OWING to the conspicuously pitiable deformity resulting from the destruction of the vertebral bodies, the subject of spinal curvature always received the attention of surgeons, but it remained for that acute and independently thinking man, Percival Pott, to give to the profession the first rational and systematic account of the etiology and progress of a disease which claimed its victims from every rank of society, and asserted its importance by the terrible distortions familiar to every observer. The works of Pott are but little read now, although written in a style which many modern authors might well copy, yet while they are hardly known among the surgeons of to-day, their author was prominent among those men of the last century who did for surgery what Petrarch and Boccaccio did for general literature at its renaissance. But the surgeons among whom Pott occupied so conspicuous a place did not merely renew an extinct or slumbering art, they were creators, so far as the term can be properly applied to the disciples of an inductive science, and from carefully made observations deduced the general laws which governed the production of the diseases of which they treated. Every one who would familiarize himself with the pathological facts concerned in antero-posterior curvature of the spine must go back to the writings of Pott, but he need go no further, and it is upon the facts he first demonstrated, and the theories and treatment he proposed, that accretions have gone on accumulating, until we have the advanced science of to-day, the last development of which, in this particular direction, is to be found in the little book whose title prefaces this review.

A little more than a year ago it was the pleasing duty of the writer to present to the readers of this Journal a review of Dr. Sayre's book upon *Orthopædic Surgery*. In that volume there was a short account of the new plan of treating antero-posterior curvature of the spine by means of a plaster of Paris jacket, and we then thought that we were justified in anticipating great results from that incipient method. While the review of which we speak was in the hands of the printer, we witnessed the application of the plaster jacket upon the person of two patients, by Dr. Sayre, at the meeting of the American Medical Association held at Philadelphia in 1876. At that time it was a matter of regret that the writing of the article referred to had not been postponed until the demonstration given by Dr. Sayre would have enabled us to speak more confidently of the great discovery, for such it truly is, of this most happy application of plaster of Paris. Since June, 1876, the plan of treatment,

then so ably enforced by the distinguished professor of Bellevue, has had wide-spread attention directed to it, and, so far as we are informed, without unfavourable comment.

That counter claims for the merit of the invention should have sprung up has been a matter of course, and we are constantly reminded that it does not belong to Dr. Sayre, that the idea occurred previously to some one else. To discuss the question of such claims for priority is at best a very profitless occupation, and it is not proposed to enter into it in this review. All great discoveries, without exception, have been the result of progressive observations, and since the first introduction of plaster of Paris for the construction of immovable dressings the range of this application has become more and more extended, so that it cannot be a matter of surprise that it should have occurred to several besides Dr. Sayre, that in it would be found a valuable means of maintaining extension in cases of Pott's disease. But it is one thing to have a vague and shadowy idea floating through the mind, or even to make one or two hesitating trials of its efficiency in practice, and quite another to put it fearlessly and confidently in practice, in a series of cases, modifying without deserting the principle, and then with equal perseverance and energy to publish the results thus obtained. With characteristic impetuosity, undisturbed by the criticisms and sneers of many among his professional brethren, with a most fortunate and wonderful indifference to the opinions entertained by others of either him or his methods, Dr. Sayre has held on his way, lecturing, demonstrating, writing, and publishing, until, as his crowning contribution thus far to surgical literature, we have this brochure on the treatment of spinal curvature by means of the plaster jacket, an apparatus whose unyielding embraces have already brought comfort and happiness to many unfortunates.

While Mr. Pott was the first to point out that the deformity and paralysis in these cases depended upon destruction of the vertebral bodies, caused by tuberculous degeneration, he shared the antiphlogistic opinions of his time, and confined his treatment to the use of derivatives in the shape of setons and issues, applied on either side of the spinous processes, and kept open for long periods. A later pathology has taught us that where tubercles do exist, the most hopeful treatment is that which consists largely of tonics, fresh air, and nourishment. Of late years the wonderful progress of the mechanical arts has exerted an important and beneficent influence within the domain of surgery, and, as the opinions of our predecessors have been proved erroneous in many particulars, there has been more and more attention directed to the proper mechanical treatment of spinal curvatures, while the existence of constitutional depravity has received its proper share of attention. But Dr. Sayre has taken a new departure, and his views of the pathology of spinal curvature are in direct opposition to the opinions once held by all, and yet stoutly maintained by many. While he does not altogether deny the existence of scrofula, he entirely excludes it as a factor concerned in the production of spinal curvature, and, provided the proper mechanical treatment is adopted, seems to regard with indifference the question of systemic taint. Even when he prescribes cod-liver oil and other nourishment, he is very particular to inform us that it is with no idea of combating a scrofulous diathesis. In this extremity of view he is opposed by many high in authority, and has arrayed against him the weight of surgical experience. When reviewing Dr. Sayre's work on orthopaedic surgery, the writer expressed his dissent

from the theories of its author on this point; so that it is not worth while to again discuss the question. Especially is this the case, as the difference is more theoretical than practical; for so long as Dr. Sayre's patients receive the treatment which his opponents unite in regarding as most advantageous for those afflicted by scrofula, it will make little difference to them that their surgeon denies that they are under the influence of anything bearing that name. Indeed, the mechanical devices brought to such perfection by Dr. Sayre all aim at getting the patient into the fresh air, that best of all tonics, and, in accomplishing that end, they are the most efficient antagonists of scrofula which we possess.

We come now to the central idea of this little volume, the method introduced to the profession by its author. This method, for we do not like to call it an invention, has that essential element of simplicity, without which the most ingeniously devised mechanical appliances rarely become available in practice. With reasonable care and that attention to details which every competent practitioner of medicine soon learns to bestow upon any plan of treatment he adopts, there is no room for failure; and if evidence of the unselfishness of Dr. Sayre were wanting, it would be furnished by his true statement that this method does away with the necessity of sending patients long distances to obtain skilled treatment at the hands of a specialist; for any properly, that is, regularly, educated physician should be able to make the application at home, and obtain perfectly satisfactory results there, quite as good as if the patient were under the hands of Dr. Sayre himself.

In furtherance of this end, and with the hope of making this method plain to those who may not meet with the volume under review, we shall now attempt to describe the steps by which Dr. Sayre and others have been enabled to achieve such decided and satisfactory results.

The patient is first provided with a closely-fitting undershirt, which is prevented from riding up by straps extending from the front and back of the garment, which are securely tied over a pad placed upon the perineum. Due precaution having thus been taken to prevent folds, which might cause excoriations, the patient must be properly suspended. To accomplish this part of the proceeding, Dr. Sayre makes use of a collar, upon which rest the chin and occiput of the patient. This collar is then attached by straps to an iron cross-piece, which, in turn, is suspended, by a ring in its centre, to a block and pulley attached to a hook in the ceiling or a tripod especially constructed for the purpose. Just enough extension is then applied to take the weight of the body off the spinal column, which limit is known to be reached by the relief expressed by the patient, and is evidenced in children by their becoming quiet, and ceasing to struggle. It is generally sufficient to raise the patient just so that his toes touch the ground, but he must not rest upon them, so as to give any twist to the body. While the suspension is thus kept up, plaster of Paris bandages are applied. These rollers are prepared in the usual way, by being drawn through freshly ground plaster, which is also rubbed into their interstices, and they are kept in a carefully closed tin box until required for use. Dr. Sayre recommends that the thin and flimsy stuff known as crinoline should be used for making these bandages, on account of the amount of plaster that can be rubbed into its meshes. Before applying the bandages, it is necessary to place over the epigastrium a long, narrow compress. This compress Dr. Sayre, with his usual unhappy system of nomenclature, calls the "dinner pad." Of the importance of this pad in affording, after

its removal, room for abdominal distension, there can be no doubt; and while we look askance at our author's choice of a name, we are quite ready to indorse the prominent attention he bestows upon the thing itself. It consists of a wedge-shaped compress, with its thin edge directed downwards, and should be extracted just before the plaster becomes firmly set. By means of this device there is a vacant space left underneath the jacket, which permits of some expansion of the abdomen after a full meal. The omission of this compress may entail much unnecessary discomfort upon the patient. The same principle or manœuvre is taken advantage of to protect any prominent spinous processes, the crista ilii, and, in the case of developing females, the breasts.

The bandages are placed in warm water and kept there until bubbles are no longer given off, and then applied, beginning at the smallest part of the trunk, going down below the crests of the ilii, then returning upwards to the upper part of the axilla. After applying one or two layers of bandage Dr. Sayre makes use of several narrow strips of sheet-tin, roughened on both sides by holes punched after the manner of a nutmeg grater. These are applied to the sides longitudinally, their object being to supply the requisite strength to the jacket without adding too much to its weight and bulk. Another bandage is then applied, and the process is repeated until sufficient firmness and strength of jacket is obtained.

After the plaster of Paris has partially set the patient is removed from the suspensory apparatus and laid upon a hair mattress, or air bed, to dry. The famous "dinner pad," and any other compresses which have been made necessary by the peculiarities of the case, are then removed, and weak spots in the jacket, which will commonly be found in spite of every care in its application, are strengthened by dusting in more plaster. Dr. Sayre also advises that indentations should be made in the jacket immediately above the crista ilii to give it greater breadth at that part.

When abscesses exist they should be freely opened. Dr. Sayre's practice being to do it antiseptically, and after the application of the proper dressing they should be covered with oiled silk, or, as we should prefer, with gum tissue. Over the oiled silk Dr. Sayre places a piece of pasteboard, with a pin thrust through it from within outwards. By this means the projection of the pin through the successive layers of the jacket will afford a sure guide to cut down upon and remove the piece of pasteboard when the plaster is nearly set. After removing the pasteboard the oiled silk or gum tissue can be cut in lines radiating from the centre of the abscess, and the ends fastened down to the jacket by means of shellac. By this contrivance direct communication is afforded to the abscess, and the proper treatment of it can be carried on without removing or disturbing the jacket.

We come next to what Dr. Sayre, with apparent pride, calls his "jury-mast apparatus," which he uses in cases where the cervical vertebrae are involved, and where, of course, mere extension of the dorsal and lumbar vertebrae do no good. We presume this title was supposed to be particularly intelligible and attractive in Great Britain, where the book was published, and whose people, as rulers of the sea, may be supposed to be specially conversant with marine terms. To many of Dr. Sayre's American readers, however, as inhabitants of inland regions, it will not appear to have any peculiar fitness. Apart from its very peculiar name, we do not see that Dr. Sayre has any reason to claim this as his apparatus, for the plan of its construction does not differ from similar machines devised by others, excepting in so far that its lower end is secured to a plaster jacket.

The lower part of the implement has attached to it strips of roughened tin, which partially encircle the chest walls. These strips are placed in position when one or two thicknesses of the plaster roller have been applied, and the jacket is then completed over them. To the projecting and stationary part of the apparatus, thus having its extending points on the surface of the trunk, is then added a properly curved rod of steel, which, reaching above the head, has secured to it by straps in the usual manner a collar, by which the head can be suspended and extension of the cervical vertebrae kept up.

The effects of applying the plaster jacket are immediate, and are painted in glowing colours both by Dr. Sayre and many others who have used it at his suggestion during the past two years. When the pathology of the disorder is considered in connection with the indications so well fulfilled by the plaster jackets, it can surprise no one that the lame should walk and leap after its application, or that both the patients and their friends should justly look with gratitude to the introducer of this remedial measure.

Passing over the laudatory letters and the numerous cases related at length in which Dr. Sayre and others at his instance have used plaster of Paris in the treatment of Pott's disease, we proceed to notice the remarks made upon the subject of lateral curvature of the spine. Dr. Sayre proposes to call this form of curvature, rotary-lateral curvature, on account of the rotation of the vertebral bodies known to exist in these cases. In discussing the cause of this rotation, which has always proved a troublesome feature in the treatment of this affliction, Dr. Sayre quotes freely from a paper read by Dr. A. B. Judson before the New York Academy of Medicine. In this paper it is shown that as the muscular attachments of the vertebrae are all connected with the processes, which are also confined by their articulations and their position in the chest walls, any disturbance of equilibrium between the forces of the two sets of muscles which results in a yielding of the bone to the stronger side must compel a rotation of its body as a consequence. By an ingeniously contrived mechanism Dr. Judson demonstrated that compression of the spinal column, when one of the vertebrae is more firmly held by the attachments of one side than by those of the other, produces a curve at that point. In the same paper Dr. Judson suggested the application of sustained extension in these cases.

Some years ago the late Professor Mitchell, of Philadelphia, used to treat cases of lateral curvature by suspending them by the arms, and he encouraged them to make the attempt themselves; but to Dr. Benjamin Lee, of the same city, is justly due the credit of having first systematically taught his patients to practice self-suspension, by climbing up a rope which passed over a pulley and was attached to the patient's head by straps, passing under the chin and occiput. This is the plan of treatment upon which, with the addition of the plaster jacket, Dr. Sayre now depends.

Our author is very emphatic in denouncing the contrivances so often resorted to in this kind of deformity, in which, while various levers and screws are resorted to to correct the trunkal twist, some of the bands of the appliance pass over the shoulder, and thus entirely prevent a proper extension of the spinal column. This plan he likens to a man who should make the two ends of an S-shaped piece of wire fast to a board and then try to straighten the curves by pressure.

To remedy the condition of things existing in this class of cases, Dr. Sayre finds the application of the plaster jacket a very valuable addition to Dr. Lee's plan of self-suspension, making the application in the same manner as he directs in cases of Pott's disease. By this combined treatment,

while moderate extension is kept up, and the tendency to rotation is overcome by the removal of compression from the vertebral column, the muscles at fault are at the same time stimulated by exercise to contract in a healthy manner, and are helped to regain their normal power. Dr. Sayre directs that in the act of self-suspension there should be no axillary bands, but that the collar only should be used, and that in making traction upon the fall the hands should be kept above the head. While the self-suspension is maintained it is important to see that the upper hand should always be the one corresponding to the side on which the concavity in the dorsal region exists.

Having now followed Dr. Sayre through the substance of this volume, it but remains for us to express our sense of the great service he has rendered the profession by its publication. We have been compelled to smile at some of the author's peculiarities of style, and have had to dissent from him in some matters of taste; but such trivialities, while they may mar the book, do not effect the value of its substance and conclusions. The method introduced by Dr. Sayre is one which cannot be too highly commended, as we cannot conceive of a case, suited for treatment at all, in which it is not likely to prove advantageous. The fruits of this method will not be confined to the rich alone, but it will prove a boon to the poorer classes of patients, and those who are obliged to depend for their surgical treatment upon public charity. In dispensaries the treatment so clearly laid down by Dr. Sayre should become the established one. Without being over sanguine, we may reasonably indulge the hope that the day is not far distant when our eyes, or those of our successors, will not so frequently be pained at the sight of deformity produced by the ravages of antero-posterior curvature of the spine; when the wan face and unhappy expression of its victims shall not so often testify to lives embittered and tempers soured by the suffering of body and anguish of mind consequent upon the unchecked progress of Pott's disease. Although we do not look upon the process of Dr. Sayre as presaging the advent of millennial happiness, for we know that many cases will persist to an untoward result despite the best treatment, yet there is no pleasanter occupation for a lover of our race than that of contemplating every fresh evidence of the progress our science is making in the alleviation of human misery.

While day-dreaming may be somewhat out of place in the sober pages of a medical review, yet, in the face of decided advances in treatment, we can well understand some one speculating upon the effect that this or that discovery, if made earlier, might have had on the events of history. It has been said that dyspepsia has decided the fate of nations, and in view of Dr. Sayre's method of treating spinal curvatures, we can fancy the same person suggesting that, had the third Richard been treated with a plaster jacket in his youth, the fate of England might have been different, and the world have lost a character which under the magic touch of genius has given delight to every reader of Shakespeare.

While the photographs in this book make the process of applying Dr. Sayre's dressing very plain, they have the awkwardness of all folded plates, and make the price of the volume very high; but had they been omitted, the bluff features of Dr. Sayre, looking his best, would not have been so familiar to his readers. To many it would have seemed in better taste, and more satisfactory in cost, to have had one or two good wood-cuts, even had they shown nothing but the process the book was written to enforce.

S. A.

ART. XXIII.—*Diseases of the Nervous System: Their Prevalence and Pathology.* By JEREMIAH ALTHAUS, M.D., M.R.C.P. Lond., Senior Physician to the Hospital for Epilepsy and Paralysis, Regent's Park, etc. etc. 8vo, pp. xvi., 366. New York: G. P. Putnam's Sons, 1878.

AMONG the unsettled questions in medicine, few have recently been the subject of so much discussion as that in regard to the comparative prevalence and mortality from diseases of the nervous system in this and former times. By many, both in and out of the profession, the assertion is confidently made that there has been of late years a progressive increase of deaths from these diseases, and inasmuch as there has probably never been in the history of man a time in which the struggle for existence has been keener, or the mental development and strain greater, than in the present, it would seem not unlikely that this opinion was susceptible of easy proof. And yet, when the facts upon which it rests are subjected to a rigid analysis, it is found that they do not positively sustain it. Indeed, so far is this from being the case, that Dr. Roberts Bartholow found himself compelled to reply in the negative to the question, "Do the conditions of modern life favour specially the development of nervous disease?" in the able and instructive paper with which he opened the discussion on this subject at the late International Medical Congress at Philadelphia.

In the volume which forms the subject of this review, Dr. Althaus endeavours to elucidate the part played by diseases of the nervous system in the pathology of Great Britain, and to show the laws to which their occurrence and fatality are subject. In order to arrive at truly reliable and definite results he has had recourse to the Annual Reports of the Registrar-General on disease and death. These, as he says, have enabled him to deal not with hundreds or thousands, but with hundreds of thousands of cases, extending not only over a few years, but over a considerable period in the life of the nation, or, from 1838 to 1871 inclusive. There is, of course, in these reports, the source of error that, as they are made up from the certificates of death filled up by the entire body of medical practitioners in the kingdom, there may have been in some cases errors of diagnosis; but the author is convinced that, with the exception of the first few years, the errors under this head cannot amount to anything very considerable.

As the general result of his researches on the entire class of nervous diseases, Dr. Althaus announces the following proposition: "The rate at which diseases of the nervous system prove fatal to the population of this country [England and Wales] is a steady one, subject to a definite law, to which there are not any apparent exceptions. This rate does not appear to vary perceptibly from time to time, and amounts to about twelve per cent. of the entire mortality from all causes." As this proposition appears to be fully sustained by the figures he adduces, it seems to us that the common opinion that nervous diseases have considerably increased during the last decennial must be admitted to be unfounded. The author's investigations have also led him to the conclusion that diseases of the nervous system occupy the fourth rank amongst the maladies destructive of human life, being only surpassed in fatality by zymotic, tubercular, and respiratory diseases.

The two preceding propositions, opposed as they are to the preconceived notions of many, will probably nevertheless excite less surprise and opposition than the third, which is as follows: "Nervous diseases are not, as

is commonly asserted, more frequent, but, on the contrary, less numerous, in large towns than in the country, and it is probable that their occurrence is powerfully influenced by race." In support of this proposition, he shows that the death-rate in London from these diseases was 10.66 per cent. of the mortality from all causes; while it was 11.20 in the southwestern counties of England, and 15.38 in Wales—that is, nearly 5 per cent. more than in London. "That the nervous system should be more liable to break down in the fine and wholesome atmosphere of agricultural districts than in the close and foul air of the courts and alleys which abound in great cities, seems," the author says, "to show that excess of manual labour is more exhaustive to the nervous system than excess of mental labour, and that the more nourishing and substantial food which is enjoyed by even the poorest classes in London, as compared with their brethren in the country, more than compensates them in this respect for the advantages the country affords as far as air and climate and the supposed wholesomeness of rural pursuits are concerned." It would be interesting to know whether or not the same rule obtains in regard to the mortality from these diseases in the United States, where destitution is comparatively infrequent, and where the population is, as a rule, so much better housed and fed in the country than in the cities; but, unfortunately, there are no statistics available for the solution of this question.

The remaining propositions are much more in accordance with the views generally held on the subject of nervous disease, and we shall therefore simply state them. They are as follows:—

1. "Sex has a powerful influence on the production of nervous diseases; for, although in this country the population of females exceeds that of males, the deaths of males from nervous affections preponderate constantly over those of females; the male death-rate being 12.94, and the female 11.62 per cent."

2. "Age has even a more powerful influence on the production of nervous diseases than sex; for these maladies attain an immense maximum in the first year, owing to the great prevalence of infantile convulsions. They are much less frequent in youth and middle age, and attain a second maximum in old age—that is, after seventy—owing to the prevalence of apoplexy and paralysis; but the second maximum amounts to only about the tenth part of the first maximum attained during infant life."

In regard to the classification of nervous diseases, the author says, the most simple and, in a certain way, admirable nomenclature is that which was adopted in 1838 by the Registrar-General in his statistical reports. On the other hand, he thinks that the nomenclature proposed by the Royal College of Physicians of London is neither simple nor practical, and that it does not fully satisfy scientific requirements. As instances of this he mentions that tetanus, shaking palsy, and chorea are put down in it among the functional diseases of the nervous system, and that paralysis is described as a disease of the nerves apart from diseases of the brain and spinal cord. Now, he says, if any fact is well established in the pathology of the nervous system, it is this, that paralysis from disease of the peripheral nerves is not only very rare, except in time of war, but, also, hardly ever fatal.

He proposes, in the place of this classification, one which he has been in the habit of using in the registration of cases which have come under his care at the Regent's Park Hospital. It would occupy too much space if it were given in detail; we therefore only mention the general headings: 1. General Neuroses. 2. Diseases of the Brain and its Membranes. 3. Diseases of the Spinal Cord and its Membranes. 4. Diseases of the

Cerebro-spinal Nerves. 5. Special Forms of Paralysis. 6. Special Forms of Anaesthesia. 7. Affections of the Vaso-motor Nerves. The first three classes are considered in the present volume, the remainder are to be discussed in a subsequent volume.

After presenting a rapid survey of the present state of the pathological physiology of the nervous centres, the author proceeds to consider the several diseases of the nervous system, taken separately, doing so in the order in which he has found them numerically important.

By far the most frequent and fatal of the diseases of the nervous system are convulsions, which caused, during the thirty years over which Dr. Althaus's researches extend, more than three-quarters of a million of deaths in England and Wales, or nearly one-half (47.84 per cent.) of the entire number of deaths from all nervous disease. The author's tables, however, show that there has been an uninterrupted fall in the mortality from convulsions ever since registration was commenced, the difference between the first and last periods of five years being as much as 18.78 per cent. This result the author attributes to our methods of treating this condition. Infants, of course, furnish by far the largest number of victims to convulsions, but we suspect that our readers will scarcely be prepared to hear that out of 23,962 deaths which occurred in England and Wales from this cause in 1847, 19,680 were of children in the first year of life, and 23,347 of children under five years of age. Sex, too, is not without its influence in the production of convulsions, which Dr. Althaus's tables show to be much more fatal to boys than to girls; the mean percentage being 25 for the former and only 20 for the latter. But these tables show, also, that this influence, although still considerable, is in process of diminution. In the remarks on the pathology of convulsions, Dr. Althaus shows that a most intimate connection exists between convulsions and anæmia of the brain.

Apoplexy is also the cause of a large number of deaths, no fewer than twelve thousand persons dying annually in England and Wales of it. It constitutes, the author says, after convulsions, the most fatal of all diseases of the nervous system, carrying off year by year, with unerring certainty, more victims than either paralysis, epilepsy, or insanity. The mortality from it is, however, very much less than that from convulsions, as it constitutes only 16.36 per cent. of deaths from all nervous diseases. It is essentially a disease of old age, although it appears to be of more frequent occurrence in infants than is generally supposed. Thus, in the year 1847, as many as 126 deaths occurred from it in infants in the first year of life, and 229 in children under five years of age; while 1017 deaths occurred from it in persons between 70 and 74, and about 1500 from it in persons over 74—a very large mortality when it is remembered how few people are alive after 74. The results of the researches of Dr. Lidell and of Dr. Hammond show a preponderance of the male over the female sex as far as mortality from apoplexy is concerned, but the author's analysis of a very much larger number of cases proves that apoplexy is more fatal to females than to males to the extent of .17 per cent. of the entire mortality from all causes. It is possible, however, as the author himself admits, that apoplexy is of more frequent occurrence in English women than in those of other countries, since they are, as a rule, more addicted to habits of intemperance. But the rule which has just been announced is not without exceptions, for the form of apoplexy to which new-born infants are most liable is oftener met with in boys than

in girls. This is no doubt owing to the fact that in the former the head is larger and more completely ossified than in the latter—a condition which is very apt to cause a tedious labour, and, in many cases, to render necessary the use of the forceps.

As the author defines apoplexy as the condition in which a person has more or less suddenly lost his consciousness, sensibility, and mobility, while respiration and the heart's action continue, he holds that it may be produced by, 1, embolism of the cerebral arteries; 2, acute alcoholic intoxication; 3, acute intoxication by opium and other narcotic poisons; 4, sunstroke, as well as by hemorrhage, and a determination of blood to the brain. He admits, however, that there is a form of sunstroke in which death occurs from syncope, and believes that its true pathology consists in paralysis first of the heat-regulating centre in the cervical cord, and afterwards of the cardiac and vaso-motor centres in the medulla oblongata. Adopting, it will be seen, the view of its nature which is generally held in this country.

As it is not always easy to recognize the different forms of apoplexy, we will quote what Dr. Althaus says, when discussing the differential diagnosis between cerebral hemorrhage and embolism:—

“In general, there is no initial decrease of temperature in softening, such as we have seen to occur in cerebral hemorrhage; or, if it should occur, it is much less marked. Bourneville has shown that in many cases of softening soon after the attack, the temperature rises suddenly to 102°C , or even 104°C ; it then falls again, reaches the normal average, and shows irregular oscillations. It sometimes remains stationary for a couple of days, or shows morning or evening falls. In cerebral hemorrhage, on the other hand, the temperature, when it has once reached 102°C , does not go back to the physiological standard unless a fresh effusion of blood should take place; and the oscillations are more regular, and occur in a narrower compass than in softening. After the temperature has been stationary in softening for a more or less considerable time, it begins gradually to rise, and reaches 103°C and 104°C ; but towards the end it is not nearly so high as in cerebral hemorrhage, where it sometimes reaches 108°C . After death there may be a slight increase, but, as a rule, the temperature falls more rapidly than it does in cerebral hemorrhage.”

The symptoms of thrombosis of the cerebral arteries, which occasionally occurs, resemble, to a certain extent, those presented by embolism, but are usually more slowly developed and are preceded by premonitory symptoms indicating the gradual constriction and plugging of the artery. These are headache, vertigo, stammering, impaired memory, numbness and chilliness of one side of the body, local palsies—especially of the ocular muscles—and other symptoms which are generally thought to be dependent upon softening of the brain. But the symptoms will of course vary with the artery obstructed. Thrombosis of the cerebral sinuses is accompanied by even less well-marked symptoms. The author mentions as among the most common of these, when it occurs in children, rigidity of the muscles of the neck, back, and extremities, nystagmus, strabismus, and ptosis, which are soon followed by somnolence and coma. In adults it is said to give rise to great depression and apathy, headache combined with sickness and vomiting, alterations in the size of pupils, clonic convulsions, and tremor of the limbs, and in some cases to congestion of the external veins communicating with sinuses. But all these symptoms may fail, for in a case under the writer's care, in which the diagnosis was confirmed by the post-mortem examination, the only evidence of cerebral thrombosis was at first a slight diplopia. This led to an ophthalmoscopic

examination, when both disks were found to be swollen. In a few weeks the patient became blind, and finally died—retaining, however, his consciousness until a short time before his death.

There is perhaps no disease of the nervous system which is held in so much horror by the laity as epilepsy. It does not, however, appear to be the cause of a large mortality, for during the thirty-five years over which the author's investigations extend, only .47 per cent. of the whole number of deaths occurring in England and Wales are attributed to it. It is more fatal to men than to women, although the difference is in this case unimportant. Dr. Althaus's figures show that it is very fatal in the first year of life, but it is probable that some of the cases which are here included under the head of epilepsy should properly be set down under that of convulsions. This is the time of life, it will be remembered, when the latter are most fatal. At all events the mortality is very slight in the second year, and continues so until the tenth year, when it gradually rises, attaining its maximum in the twentieth year of life. The liability to die from this disease gradually diminishes as age advances.

The author recognizes three principal forms under which epilepsy presents itself. These are, of course, 1, *epilepsia gravior*; 2, *epilepsia mitior*; 3, *epileptic vertigo*. In regard to the aura which generally precedes the attack in the first variety, the author believes that it is "part and parcel of the epileptic attack, and differing from the latter only in degree." "This giddiness," he goes on to say, "is a lesser degree of coma, and localized convulsions in the muscles of the wrist, a slighter degree of general convulsions. We can only assume the aura to be peripheral in those cases where injury of peripheral nerves, such as the sciatic or the fifth, appears to give rise to epilepsy. The fact that an attack can sometimes be prevented during the aura by a powerful impression being made upon certain peripheral parts, does not, by itself, speak for the peripheral nature; for under such circumstances there is no interruption to any peripheral excitement spreading towards the centre; but, on the contrary, reflex inhibition spreading from the centre towards the periphery."

It does not appear to be fully recognized as yet by the members of the legal profession that patients, while suffering from epileptic vertigo, often perform automatic acts, which are in most instances perfectly innocent and harmless, but for which they are entirely irresponsible. Unprovoked murders have been committed by individuals while in this condition, and there is reason to fear that many have suffered the extreme penalty of the law for offences of which they were morally innocent. The author dwells at some length upon this form of epilepsy, and records several cases in which automatic acts had been performed while in a state of unconsciousness by patients who had come under his observation.

The relation which chorea bears to rheumatism has been the subject of much discussion of late years. By those who believe that the symptoms of the former disease are wholly due to the impaction of minute emboli in the smaller arteries of the brain, the connection is believed to be most intimate. The author, on the other hand, believes that the embolic theory of chorea is as yet unproven, and that it utterly fails to explain those cases in which the symptoms of the disease supervene immediately after fright or other mental emotions. He does not even consider the presence of a murmur as a positive indication of the existence of endocarditis, as it may be due either to anaemia or to the irregular action of the cardiac muscles, which permits a certain amount of regurgitation by inter-

fering with the closure of the auriculo-ventricular valves. Indeed, Dr. Dickinson has rendered it probable that in these cases there may be, in consequence of the irregularity of the heart's action, a deposition of fibrin upon the valves, which may be mistaken for the effects of endocarditis. The author's views on the pathology of chorea may be summed up as follows:—

“1. *In a large class of cases chorea is owing to the alteration in the composition of the blood, which is associated with rheumatic fever, and which is known to affect the nervous centres as well as other organs.* 2. *In another large class of cases chorea is produced by direct irritation of the nervous system, which is either purely mental in its character, or partakes of a reflex character (chorea gravidarum and after injury).* 3. *Endocarditis exists in the large majority of cases of chorea; and is either pre-choreic, where the rheumatic influence has to be accused, or post-choreic, where we assume it to be due to irregularity in the action of the cardiac muscle; but endocarditis cannot be considered a cause of chorea.* 4. *Chorea is owing to hyperæmia of the territory of the middle cerebral artery, and more particularly of the corpora striata. In cases which end favourably, this hyperæmia does not proceed to the rupture of the bloodvessels; but in fatal cases effusion of blood and consequent injury to the surrounding tissue take place.* 5. *A similar affection of the spinal cord, more particularly in the region of the posterior horns, is generally associated with the cerebral changes; and where mental symptoms have been prominent during life, it is probable that the cineritious structure of the convolutions of the brain has also been in a state of hyperæmia.*”

Chorea is not a fatal disease, since the author found it to be the cause of only .10 per cent. of the deaths from nervous disease, and of only .012 per cent. of the deaths from all causes. His researches also show it to be a little more than twice as fatal in girls as in boys.

Dr. Althaus subjects in the same way the statistics of the other diseases of the brain and spinal cord to a careful analysis, arriving at results which cannot fail to be interesting to the student of this department of our science; but unfortunately want of space prevents us from noticing in further detail this most excellent work.

The author, although, as his name implies, a German, writes English in such a way that his nativity might almost escape detection. He has, however, fallen into a curious mistake in regard to the word *decubitus*, which means in our language the position which a patient assumes in bed. The American or English reader who associates no other meaning with this word, will scarcely understand such sentences as the following: “Thus *decubitus* may kill in a variety of ways.” “Acute *decubitus* is observed not only in the sacrum, but also in the hips, knees, and ankles.” They will become intelligible enough to him when he learns that *decubitus* is the German word for bed sore.

J. H. H.

ART. XXIV.—*A Compend of Diagnosis in Pathological Anatomy, with Directions for making Post-mortem Examinations.* By DR. JOHANNES ORTH, First Assistant in Anatomy at the Pathological Institute in Berlin. Translated by FREDERICK CHEEVER SHATTUCK, M.D., and GEORGE KRANS SABINE, M.D. Revised by REGINALD HEBER FITZ, M.D., Assistant Professor of Pathological Anatomy in Harvard University. With numerous additions from MS. prepared by the Author. 8vo. pp. xxxvi., 440. New York: Hurd & Houghton, 1878.

PATHOLOGICAL histology, as the basis of pathological anatomy, although one of the latest born of its departments, is after all that upon which true scientific medicine most depends; and this fact, which has for years been accepted on the continent of Europe, is now becoming fully recognized in our chief medical centres, and must ere long be both understood and acted upon by every intelligent physician in the land.

Indeed, when we come to attentively consider the subject, it is obvious that around pathological anatomy as a centre revolves the whole circle of the medical sciences, because, since the beginning of each departure from health, the initial starting point of every malady, is one of those infinitely various structural alterations, to which our systems are constantly liable, it follows that, on the one hand, practical medicine and surgery with their study of symptoms, and application of remedies (including therefore *materia medica* and chemistry), can only be securely founded upon an accurate knowledge of the tissue changes which alone are the primary elements of disease; and, on the other hand, since physicians have professionally no concern with healthy human bodies, it is of course only by way of standards, according to which we can judge the structural alterations discovered in the study of pathological anatomy, that the facts revealed by normal anatomy and physiology are of any practical value to us merely as medical men.

The book before us is the first work in our own language which points out to the student of pathological anatomy a complete systematic course for the combined macroscopic and microscopic examination of the various organs, and for a consequent accurate diagnosis of the lesions which have been the cause of death. Representing as it does the teachings of our greatest living pathologist, Prof. Rudolph Virchow, to whom Dr. Orth has for some time been first assistant in the Pathological Institute of Berlin, and thus embodying the gathered experiences of nearly twoscore years as to the best and most practical methods of investigation, it is a volume which no scientific physician can afford to do without. This will be, we think, amply proved by the outline of its contents, and occasional abstracts we propose to make from its pages.

After a table of contents, which is invaluable as a guide to all the details of the several parts and organs which it is desirable to investigate, the manual appropriately commences with some admirable suggestions in regard to the preliminaries, instruments, and appliances for performing pathological autopsies, which are stated to differ from those made for medico-legal purposes only in that during the latter everything which may serve the ends of justice is treated with even greater accuracy and detail.

Among the preliminary arrangements we find it advised that autopsies should be made by daylight, because yellow artificial light modifies the natural colour of the parts. Indeed, the new Prussian regulations for foren-

sic physicians, which are generally followed throughout the volume, do not allow an autopsy to be made by artificial light unless circumstances are such that it cannot be postponed. The body should rest on a table high enough to render much stooping unnecessary, and this should be secured even in private houses, where we are obliged to improvise a suitable support by the aid of an old door, or some planks, sustained on the backs of chairs.

In the list of instruments prescribed by the regulations we find besides scalpels, forceps, hooks, saws, etc., a pair of callipers, a metre (or yard) measure, a large graduated vessel for measuring fluids, scales with weights up to ten pounds, a good magnifying glass, blue and red test-paper.

“The sharper the knife the better, and it is not to be held like a pen as in the dissecting-room, but grasped firmly in the hand: incisions should be begun with the heel of the blade, not the point, and the knife swept along from the shoulder rather than the wrist, thus making a long smooth cut. . . . Virchow affirms that a large cut, though made in the wrong place or direction, is as a rule preferable to one or many small cuts, which are correct in these respects.” It is also very important that incisions should be *smooth*, as may be insured by avoiding excessive pressure on the organ or part, and drawing the knife firmly and steadily through it. This latter remark applies with especial force to the softer organs, and above all to the brain, in connection with which Virchow says, ‘better false cuts if smooth than jagged ones which are correct.’”

In regard to microscopic investigation we are told that it is often convenient to have a microscope at hand for immediate use, though generally it will be found better to take home anything which requires the use of that instrument, and there examine it at leisure. Valentin's double knife is recommended as almost indispensable for fresh specimens. In using this knife care should be taken that the blades, which should be very sharp, are as nearly parallel as possible, and if the organ to be examined is of lax tissue, they should be more widely separated than if it is dense. Before using it the instrument should be dipped in a mixture of alcohol two parts, and water and glycerine, in equal proportions, one part, to prevent the section from adhering to the blade and being torn. The knife after being thus moistened should be held like a fiddle bow, and the anterior extremities of the blades laid on that portion of the organ from which it is desired to obtain a section, and which should in some way be put upon the stretch. The slice of tissue is then made by pushing the knife forward its whole length, with moderate pressure downwards, and drawing it backwards again if needful. Sections and teased-out specimens should always be examined in indifferent fluids, such as aqueous humour, or serum, or half per cent. common salt solution. Among reagents iodine, osmic acid, acetic acid, caustic soda, and muriatic acid are recommended, and their use described. Much, it is stated, can often be gained, even in the examination of fresh specimens, by the employment of various colouring matters. Methyl-aniline is said to be very convenient on account of the rapidity with which it acts, its aqueous solution of one-tenth of one per cent. staining nuclei of cells a beautiful blue colour in a few minutes; its value is much increased by the fact that it stains tissues which have undergone amyloid degeneration of a bright red tint. Haematoxylin is also valuable and much more permanent, except in the presence of an acid, the smallest quantity of which will decompose it. The formula advised for Haematoxylin is that of E. Klein, in which the solution is preserved by about fifteen per cent. of alcohol. Carmine in the usual form is recommended, when more time can be expended in the preparation of the specimens.

We next come to the directions for systematic inspection of the body, including that required for medico-legal purposes, and that of new-born children; under this latter head we notice the convenient rule that, during the last five months of fetal life, the length in centimetres is (about) five times the number of the lunar month, which the child has reached in its development.

After minute instructions in regard to the more common diseases of the skin, hair, nails, etc., we find, on pp. 26-31, some excellent advice in regard to the diagnosis of external tumours, for example—

“Soft warts or moles when congenital are called mothers’ marks (*naevi materni*), and belong almost exclusively to the true skin. They are more or less sharply elevated above the surface: are seen on section to consist of soft gray tissue, which is strongly contrasted with the structure of the skin: extend for a variable depth into the cutis, and sometimes into the subcutaneous tissue: and are covered by an epithelial layer which is but little if at all thicker than normal. They are often pigmented, the pigment lying partly in the lower layers of epithelial cells, but chiefly in the richly cellular connective tissues of which the mole is composed. These formations are interesting chiefly from the frequency with which sarcomatous tumours spring from them. . . . The so-called dermoid cysts resemble wens closely, but are much more rare. They range from the size of a walnut to that of a hen’s egg, and consist of a sac containing a soft, yellowish, greasy mass of fat, cholesterine, epidermis, etc. Sometimes hairs, or even more [highly] organized structures, are found in them. The wall is not as in a wen a simple fibrous investment, but contains all the elements of the outer skin—epidermis, cutis richly supplied with vessels, hair, and sebaceous glands. . . . The formation of sebum predominates over that of epidermis—the reverse is the case in wens—and hence a large cavity containing chiefly sebum, or a honey-like matter, may nearly always be classed as a dermoid cyst. (Virchow.)”

Again, in regard to the very common fatty growths met with in all parts of the body, our authors remark clearly and briefly—

“Lipomata (fatty tumours) are often met with on the skin, and are to be regarded as local hyperplasiae of the subcutaneous fat tissue. They are distinctly lobulated; the lobules are separated by vascular connective tissue, and the fat cells are plainly visible to the naked eye. These tumours are more or less elevated above the surface, and sometimes indeed are only connected with it by a small pedicle (*lipoma pendulum*). If the interstitial connective tissue be abundant and dense, the tumour is harder, and white bands are seen running through it (*lipoma fibrosum* or *durum*); if the tissue softens—this is more liable to occur at the centre—the fat escapes from its limiting membrane, and a cavity is formed filled with an oily mass. Telangiectasis is often associated with these tumours (*lipoma telangiectodes*); this form is congenital. A remarkable formation of fatty tissue often takes place about old hernial sacs.”

“A growth of mucous tissue is sometimes found in lipomata, especially at the centre (*lipoma myxomatodes*, or *myxoma lipomatodes*, according as either structure predominates). The myxomatous portion is somewhat transparent, gelatinous, and becomes white on the addition of acetic acid, as can be seen with the naked eye. Under the microscope—a bit snapped off with the scissors will generally answer the purpose—one sees a perfectly transparent substance, in which the addition of acetic acid produces a filamentous or granular opacity, which does not disappear on adding an excess of the reagent, and which contains a network of star- and spindle-shaped cells with anastomosing processes.”

From this extract, which is but a fair sample of the concise yet comprehensive manner in which almost every point in diagnosis is explained, our readers can form an opinion of the extremely practical nature of the work, and its great usefulness, not only to beginners, but equally to advanced students in pathological anatomy. Especially is its value enhanced by

numerous important hints in differential diagnosis, such, for example, as the following: "There is one point in regard to the distortion of the nose which is of special importance. Lupus attacks first the anterior portion (the soft parts and cartilages), whilst syphilis attacks the bone first, and allows the bridge of the nose to sink in."

Among the few errors of omission and commission in this part of the volume which have escaped the attention of author, translators, and reviser, and which should be corrected in the next edition, which we hope will be soon called for, we notice the following on p. 66: "Needle preparations of gummy tumours" should be explained to mean specimens prepared by teasing out fragments of tissue with mounted needles; and on p. 77, the illogical statement that the fact of the vascular network of a so-called apoplectic cyst resembling the fibrous form of mucous tissue in the umbilical cord "is a proof" that the neuroglia from which this vascular network develops, is closely allied to mucous tissue, should be modified.

In regard to the interesting and important subject of cancer, our author follows, of course, Virchow and Rindfleisch in their doctrine, that the diagnosis of carcinoma can be considered final only when it has been demonstrated that the structure consists of masses of cells more or less epithelioid in character, and lying in alveoli with fibrous walls; although we think the absence of any intercellular substance lying between the individual cell elements which occupy each alveolus should be insisted on as a part of this definition. We find the following excellent suggestions concerning the recognition of supposed carcinomata.

"The cut surface is not uniform and homogeneous, but on close examination is seen to present grayish-white, and often distinct retiform bands, which inclose a white, or yellowish-white substance. An opaque and often milky fluid can be scraped off with the knife; and this juice the microscope shows to consist of irregular angular cells of varying size, with large vesiculate nuclei and large shining nucleoli (epithelioid cancer cells). This fluid varies greatly in quantity, and there are hard cancers from which the cells cannot be squeezed out, and the nature of which can only be determined by the aid of the microscope. Sections of these show larger or smaller compact collections of cells, without intercellular substance, in character similar to those above described, which are separated by septa of variable width consisting of connective tissue—sometimes dense, sometimes looser, and rich in cells. The cells may be removed by firm brushing under water with a camel's hair pencil, and the stroma thus brought into view."

The solution of that problem which sometimes proves so difficult not only to novices, but also to microscopists who have long passed the period of their novitiate, the diagnosis of sarcomata from carcinomata is efficiently aided by the description above quoted, and that of the histological structure of the sarcomata given on pp. 33 and 34. In the next four pages the peculiarities of colloid cancer, and of epithelioma, are minutely described.

In proceeding to the internal investigation of the cavities of the body, it is advised that the head should be examined first, then the thorax, and lastly the abdominal cavity, although the last of these is actually opened before the second. If it is desirable in any particular case to examine the spinal cord, this should be done first of all, partly to avoid turning the body oftener than is absolutely necessary, but chiefly to render investigation of the brain and cord, which are so intimately related in physiological function, as connected as possible. The soft parts are to be dissected away from the spinous processes and arches of the vertebræ, which are then to be cut away with a chisel or rachitome, and the spinal marrow carefully and gently lifted out of its bed.

In opening the head the ordinary method is recommended of making an incision through the soft parts over the vertex from one mastoid process to the other, reflecting the scalp forward as far as the superciliary ridges, and backward behind the external occipital protuberance, then incising the temporal muscles and remaining soft parts on each side from the glabella to the occipital protuberance, and finally sawing through the skull in this line. Prof. Fitz suggests in this connection that, when it is desirable to avoid any chance of disfiguring the corpse, this incision should be wedge-shaped, the apices of the wedge being at the base of the mastoid process; and that when the calvaria is returned to its place, it should be secured in proper position by sutures passed through the cut edges of the temporal fascia on each side. As any permission to make subsequent autopsies in a particular neighbourhood, especially in the rural districts, so much depends upon the avoidance of the least apparent mutilation or disfigurement of the body, we feel sure our readers will be grateful for this valuable hint.

When the dura mater is brought into view by the removal of the calvaria, its tension should be tested by attempting to lift up a fold of the membrane near the apex of the frontal lobe, according to the following simple rule. In the usual position of a body on the back, we should be able to raise up a small fold, but if, on the one hand, a pretty large fold can be thus lifted, the contents of the skull are diminished; whilst, on the other hand, if no fold at all can be raised, they are increased, as occurs in hydrocephalus, cerebral hemorrhage, tumour, abscess, etc.

The appearances indicative of meningeal hemorrhage, inflammation, etc., are carefully pointed out, but must not long detain us, although we cannot resist quoting the following admirable paragraph on tubercular meningitis on p. 63.

“The most important changes which are found in the pia mater of the base, are those which are due to *arachnitis tuberculosa*, and from the fact that they are generally confined to the base, this disease has received the name of *basilar meningitis*. The anatomical appearances consist in the presence of collections of a yellowish gelatinous substance of varying consistency in the network of the pia, within the circle of Willis, and especially about the optic commissure: the exudation may also extend far into the fissure of Sylvius. The diagnosis is confirmed by the discovery of minute miliary tubercles, which seem to follow the course of the bloodvessels, and are most abundant on the under surface of the frontal lobes, or on the island of Reil. The tubercles may also be met with in the connective tissue of the pia apart from any vessels. For microscopical examination a small bit should be cut away from [out of?] the pia, and carefully separated from the surface of the brain with the aid of a stream of water, and then the bits of cerebral substance which still adhere to it are to be removed under water with a camel's hair brush. The tubercles may now be seen in the walls of the vessels with the naked eye, and when examined in water, under the microscope, appear as round-celled fusiform swellings of the adventitia. The nuclei are rendered more distinct by acetic acid, and the preparation may be readily stained. Giant cells are never found in these tubercles.”

It is well known that the most common tumours of the brain substance, which is next examined, are the sarcomata and glio-sarcomata, but the diagnosis of these growths from tubercular nodules, erroneously denominated solitary tubercles, and from syphilitic gummata, is often attended with the greatest difficulty because the sarcomata are so apt to undergo fatty degeneration. Dr. Orth states, however, that a growth which is composed of a gray and transparent or tough and fibrous ground work, with numerous yellow and homogeneous masses scattered through it—and especially if these masses are relatively dense—may be regarded as of

syphilitic origin. In regard to the differential diagnosis between tubercular nodules and gummata, he informs us that the most distinctive characteristic of the former is the presence of gray submiliary tubercles, in the grayish transparent zone, which surrounds the yellow and cheesy centre; these miliary tubercles are easily isolated with the aid of needles, and often contain enormous giant cells. Tubercles again are more entirely and uniformly caseous than gummata, the cheesy portions of which are either surrounded or penetrated by more strongly marked zones of tissue, of varying consistency. Lastly, the larger tubercles show central softening much oftener than gummata, although the circumjacent cerebral substance is more liable to softening in syphilis than in tuberculosis.

After full and elaborate instructions for examination of the brain, both in the ordinary mode and by Meynert's method, our authors proceed to the investigation of the nose, eyes, and ears. The growing importance of ophthalmological researches, which are too often neglected for want of knowledge upon the part of the operator of how to accomplish his object without disfiguring the corpse, leads us to quote the following advice.

The condition of the retina and choroid can be easily determined—

“by removing the roof of the orbit, with the mallet and chisel, from the inside of the skull; the orbital fatty tissue and the muscles are then to be excised, and the globe to be drawn backwards, when the posterior half should be cut away with the scissors. The anterior portion of the globe, which is left behind [and in front?], may be kept in place by plugging the orbit, and thus all deformity be avoided. If one does not happen to have a mallet and chisel at disposal, the bone scissors generally serves the same purpose.”

There is much that is worthy of careful study in regard to the walls of the chest and abdomen, and the contents of the latter, although we observe on p. 95 the excuse for classing “simple hypertrophy or pure adenoma of the breast under cancer,” viz., “for the reason that transition forms occupying an intermediate position between the two are sometimes found,” is diaphanous to excess. On the same principle all animals might be “classed under” *vegetables*, viz., “for the reason that transition forms occupying an intermediate position between the two are sometimes found.” We next come to the important step of opening the thorax. To remove the anterior wall of the chest the cartilages are to be divided close to their costal insertions, any escape of gas being looked for at the first cut, if there is suspicion of pneumothorax. A lighted match held over the opening will either flare up or be extinguished, if gas is present, and its escape can thus be demonstrated to lookers-on. If the cartilages are calcified, divide the ribs themselves with a saw or bone nippers. The clavicles are then to be disarticulated from the sternum by semilunar incisions, and the judicious advice is given that “in the latter part of these incisions the handle of the knife is to be somewhat depressed backwards” (*i. e.* towards the spine of the corpse as it lies upon its back), “to avoid the lower and inner prominence of the articular surface of the clavicles.” The subjacent cartilage of the first rib is then to be incised carefully to avoid injury to the great vessels beneath, after which the attachments of the diaphragm to the false ribs and ensiform cartilage are to be divided, and the sternum raised from below, the mediastinum being separated from the bone by cautious transverse cuts. Next, the contents of the mediastinum, the pericardium and its liquid contents, and then the heart itself, are to be investigated. In regard to this latter organ, we find the useful suggestion that “the formation of the apex constitutes a good indication of the presence or absence of enlarge-

ment of the right side. In the normal heart the apex is formed solely by the left ventricle; but when the right ventricle shares in its formation, an enlargement has taken place. A depression of greater or less depth is sometimes met with between the apices of the ventricles, as a congenital deviation from the normal form." After inspection, the heart should be opened before removal from the body, incisions (which are minutely described) being made into its anterior surface on each side of the septum, in order to bring into view the cavities of the right and left heart. At this point in the examination changes in the blood are considered, and the varieties in its coagulation, colour, number of red and of white corpuscles, etc., observed. Seoflers at the germ theory of disease, and at the doctrine that organic entities may be the causes of constitutional maladies in the human organism, will doubtless find food for profitable reflection in the following statements:—

"Of all the modifications which the blood undergoes, the least understood, and at the same time the most important, is unquestionably that which is due to an admixture with low organisms. Recent researches leave no doubt whatever that in some diseases the blood contains during life, though to a far higher degree after death, certain low forms of animal or vegetable life.¹ Those organisms which have a thoroughly characteristic appearance can be detected without any great difficulty with very high powers, provided that the layer of blood which is examined be very thin, or that the red corpuscles have been destroyed with acetic acid or alkalies. The number of diseases in which these organisms are found is small. During the paroxysms of relapsing fever the blood contains delicate spiral thread-like bodies (*spirilla*), which move by turning in the direction of their axes (?), and disappear after death. In anthrax or malignant pustule, a rare affection in the human subject, the blood contains small rod-like bacteridia, which are often joined together as long serpentine threads. These are, indeed, not constant, but may be replaced by exceedingly minute spherical bodies (*micrococci*), the detection of which requires very high powers. They can easily be distinguished from the rod-like bacteria seen transversely by gently tapping on the cover glass, and thus causing movement in the fluid. . . . If, therefore, chains of equally sized spherules are found in the blood, they can be dignosticated as micrococci with a certainty which is somewhat proportional to their numbers. The most characteristic form in which the micrococci occur, is that of large collections or groups, in which the separate granules preserve a uniform size, and a uniform distance from each other." (pp. 118, 119.)

It is worthy of note in this connection, that on p. 24 the positive assertion is made that the gray coating of wounds affected with hospital gangrene is made up—

"chiefly of micrococci (minute spherical bodies, either aggregated in masses or strung together like beads on a rosary, and characterized by uniformity in size and a peculiar lustre), and bacteria (staff-like bodies of various lengths, sometimes darting and wriggling about, sometimes strung together in chains or collected in masses, in which latter case they are distinguished from collections of micrococci by the presence of a transparent and gelatinous substance in considerable amount). To bring out these bodies clearly it is advisable to add to the microscopical preparation a little dilute caustic potash, which dissolves most organic structures, but does not affect these organisms."

Dr. Orth states that many authorities refer to the presence of parasites, not only in the serum of the blood, as has been described above, but also in the cell elements. Whilst this is probable as regards the leucocytes, he

¹ [These "recent researches" in Germany were anticipated in their results by observations laid before the readers of this Journal nearly ten years since. *Vide*, amongst others, a paper entitled "Experiments showing the occurrence of Vegetable Organisms in Human Blood," in the July No. of 1868, p. 291.]

thinks that crenation of the red corpuscles, especially when seen edgewise, may have often misled observers who consider the granular appearance as due to vegetable organisms, a view which is no doubt correct. Micrococci, he concludes, "have been found in the blood in the most various diseases, but chiefly in septicæmia, puerperal diseases, diphtheritis, etc. They are, however, not constant even in these affections."

On p. 123, the use of osmic acid solution in distinguishing the oil globules of fatty degeneration (of the heart, etc.), might with propriety be advised.

We should be glad, did space permit, to consider in detail the further admirable directions for examination of the heart and lungs, which must commend themselves to every one who feels the need of a guide (as every practitioner must do occasionally, at least) to the thorough and exhaustive investigation of the important organs in the thoracic cavity. But we must content ourselves by urgently recommending every physician who has either expectation or hope of enjoying the privilege of making a single autopsy during the next decade to carefully peruse this volume.

We will briefly notice our author's treatment of a few of those mooted points upon which, as he mentions in his preface, additional light has been thrown by recent investigations.

The doctrine of the non-identity of phthisis and tuberculosis, so positively taught a few years since by Niemeyer and his followers, seems to be contested with renewed acrimony at the present day, and we sought with considerable interest for Dr. Orth's exposition of the latest views in regard to it. Very adroitly, however, after describing the actual conditions of the lungs in tuberculosis, broncho-pneumonia, and fibroid phthisis, he eludes the chief question in the following paragraph:—

"We have now described all the processes that are comprised in what is generally known as *pulmonary consumption* or phthisis. It would be a great mistake to suppose that any one of these processes singly brings about all the changes that are found in a case of phthisis: as a rule, several or many processes are coexistent, and this accounts for the great variety of appearance in phthisical lungs, of which scarcely any two are to be found alike. For this reason, we cannot undertake to describe the manifold appearances to which combinations of the processes may give rise, but hope that what has been already said will enable the reader to distinguish the several processes from one another, and thus understand their sum. We would only repeat that many cases which were at first of a purely inflammatory nature, are subsequently complicated with tuberculosis, which also takes its part in the destruction of tissue. The condition receives its name from the process which may happen to be predominant, and we speak of inflammatory or pneumonic phthisis when inflammation and caseation are chiefly prominent, or of tubercular phthisis when the reverse of this is the case."

In the present lamentably unsettled state of this problem, perhaps no *safer* suggestions than these could be offered, but we earnestly trust that further investigations will, before many years, unveil that mystery which now surrounds the relations, if there be any existing, between the exudation cell of pneumonia and the tubercle corpuscle of tuberculosis.

In applying the hydrostatic test to the lungs of new-born infants in medico-legal cases, the following minute instructions, quoted from the official "Regulations," are well worthy of observance, as comprising the lessons of most recent experience. After opening the neck and tightly ligating the trachea above the sternum, this bone and the costal cartilages are to be removed in the usual way. "The trachea is then to be divided above the ligature, and the lower portion removed from the body,

together with all the thoracic organs. The thymus glands and heart are next to be dissected off with care, the interior of the latter may now be examined, and the lung is then to be placed in a spacious vessel, filled with fresh cold water, to see whether it will float. The lower portion of the trachea and the primary bronchi are then to be laid open, and the character of their contents accurately noted," etc.

The subjects of leucæmia and pseudo-leucæmia, which have of late attracted so much attention in the medical world, are treated of in the usual concise yet clear manner, and the pathological changes met with in the spleen and lymphatic glands, in these affections, briefly described. No positive rule is given by which to distinguish histologically between the alterations of the splenic pulp and follicles, in true and false leucocythæmia, it being expressly stated that malignant lympho-sarcomatous growths in the latter malady cause the follicles to be universally enlarged to a varying degree, sometimes to the size of a cherry or walnut, "and the spleen may then greatly resemble that variety of leucæmic spleen in which the follicles as well as the pulp are hyperplastic." The diagnosis, however, is to be made by observing that the number of the white blood corpuscles is not increased, although our authors neglect to mention that since the red disks are often seriously diminished in number, this changed proportion between the two kinds of corpuscles might give rise to an incorrect diagnosis of true leucocythæmia, unless the actual number of red disks per cubic millimetre is determined by means of Hayem's or Malassez's apparatus.

Respecting the *cutis area* of Addison's disease, and its association with pathological changes in the supra-renal capsules, it is stated that the bronzed hue is least constant in cancerous, most common in cheesy degeneration of the capsules. It is much to be regretted that the difficulty of securing specimens of this rare affection still renders the theory that this cutaneous discoloration is due to alterations in the neighbouring sympathetic nerves composing the solar plexus and the semilunar ganglia only a plausible hypothesis.

In the excellent section upon the kidney, the development of purulent interstitial nephritis is attributed first to the production of metastatic abscesses by septic emboli, and second to the direct effect of the presence of low organisms (bacteria, micrococci, etc.), which have wandered upward from the bladder, along the ureters, pelvis of the kidneys, and the uriniferous tubules. In this affection the abscesses appear on the surface as minute yellow points of the size of a millet grain, and are arranged in small groups; but on making a section, these little abscesses may often, not always, be traced through the cortical into the pyramidal portion. Microscopic examination, according to Dr. Orth, "shows that the urinary tubules are completely plugged and even distended with micrococci, that the epithelial cells, not only of these but of the neighbouring tubules, are fatty degenerated, and that only finally a zone of interstitial suppuration surrounds these centres." This disease is almost always accompanied by inflammatory and often actually diphtheritic processes in the bladder, occurring as causal complications, and it was in it that Klebs first recognized the constant appearance of low vegetable organisms, and attributed to them their true causative relation, which has not, in this country at least, received the attention which it merits. The assertion on p. 216, that tube casts in tubules of the kidney "sometimes undergo amyloid

degeneration," is unproved, and we think it much more probable that the amyloid substance itself forms the tube cast.

The pathological conditions of the uterus after death from puerperal fever are in like manner considered by Dr. Orth to depend on infection with, and propagation of, low vegetable organisms (bacteria and micrococci). When the presence of these agents is confined to the mucous membrane, it is manifested by a diphtheritic inflammation (*endometritis diphtheritica*). It presents a gray, grayish-yellow, or grayish-white mass, containing innumerable colonies of micrococci, and also an infiltration of the mucous membrane itself, as may easily be seen by making incisions into that structure perpendicularly to its surface. This diphtheritic process "usually takes its origin in the lacerations of the cervical portion, or in the place where the placenta was attached, both of which afford particularly favourable conditions for infection. In many cases the morbid changes extend deeply into the uterine tissue, and both bloodvessels and lymphatics are found to contain soft, crumbly, yellowish-red thrombi, with colonies of micrococci, and to have become actively inflamed." Obviously these results of microscopic investigation, which seem to be considered as unquestionable facts by our authors, both explain the hitherto inexplicable infectiousness of puerperal fever, and suggest simple but efficient modes of attaining its complete prophylaxis.

On p. 262 in the declaration that "the processes which extend from the uterus (to the parametrium and broad ligaments) are essentially puerperal affections," the words "chiefly" or "generally" should be substituted for "essentially;" and the statement on p. 409 that "variation in the number of bones frequently occurs, especially in the form of supernumerary joints in the fingers and toes, or of supernumerary fingers or toes," is quite at variance with the experience of most practitioners, at least in America.

But these and a few other blemishes mentioned above are of very minor importance, and we must offer our hearty thanks to the translators and to Prof. Fitz for presenting to us this invaluable manual in such good, clear, readable English, free from the awkward Teutonic words, phrases, and idioms which have so seriously impaired the value of some similar volumes, and rendered them in portions absolutely incomprehensible to medical men who were not also students of the German tongue. Dr. Fitz modestly informs us that "whatever may have been sacrificed in style has been (so sacrificed?) for the sake of expressing the authors' views as exactly and concisely as possible. A correct translation has been deemed of greater importance than an elegant one." We think, however, that in this book clearness and accuracy have been, with a few rare exceptions, most happily combined with excellence or even elegance of diction.

The work is handsomely printed on fine paper, with large clear type, and in its mechanical execution fully sustains the high reputation of the well-known book publishers to whom we are indebted for its production.

J. G. R.

ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXV.—*Medico-Chirurgical Transactions*. Published by the Royal Medical and Chirurgical Society of London. Second series. Volume the Forty-second. Svo. pp. lxxiii., 335. London: Longmans, Green, Reader, and Dyer, 1877.

THIS volume comes to us in the style of its predecessors, and full of valuable information. It contains twenty-three papers, many of which have been noticed at length heretofore in the pages of this Journal, or in the *Monthly Abstract*. We will, therefore, proceed to examine only those, analyses of which have not already been laid before our readers. And the first is a *Resection of the tarsal bones for double congenital talipes equino-varus*; by Mr. DAVIES COLLEY. The patient, aged twelve years, was admitted into Guy's Hospital, having congenital deformity of both feet. When four years of age some of the tendons were divided, but without any beneficial result; since then he had not been under any treatment whatever. On the 12th of October, the boy being in good condition, chloroform being administered, and an Esmarch bandage being applied, an incision three inches long was made along the outer border of the left foot from the middle of the os calcis to the middle of the fifth metatarsal bone, and from the centre of this another incision two inches long was made transversely across part of the dorsum, dividing the tendons of the peroneus longus and brevis and the extensor brevis digitorum. The cuboid bone was now removed, and the large processes of the os calcis were removed by a saw in a plane looking forwards, outwards, and upwards. The three cuneiform bones were then removed, and a large part of the scaphoid and a part of the head of the astragalus were excavated. Then the articular cartilage from the base of the two outer metatarsal bones was removed.

Antiseptic spray was used during the operation and at each dressing afterwards. There was some oozing, which was controlled by the use of a sponge soaked in carbolic lotion, which was kept in its place for a week after the operation.

On the 23d of November, the left foot being nearly healed, the right one was operated on. The bones (tarsal) being soft were pared away without the use of the saw, the parts removed being similar to those of the right foot. There was but little discharge, and no burrowing of pus. Each foot was kept in position by a back splint extending from the middle of the thigh to within four inches of the heel. To the distal end of this was fastened a transverse bar of wood, terminating on either side in short upright bars, to which the fore part of the foot was attached by means of strapping.

On the 1st of January, the patient was being wheeled about in a chair.

In less than ten weeks from the second operation the wounds were quite healed, and the splints and dressing were left off. The feet were now short for a boy of his age, and the heel projected somewhat backwards. The boy could walk well, treading upon the entire sole of each foot. The movement of the toes was perfect. The September following the boy walked eleven miles with perfect comfort.

From this operation and its subsequent successful treatment, Mr. Davies Colley suggests the following points:—

- “ 1. It is not necessary to divide the tendo Achillis before the resection, and perhaps not at all.
- “ 2. Esmarch's bandage is of good use, rendering the tissues bloodless at the time of operating.
- “ 3. It is better to begin by removing the cuboid bone, and then remove such portion of the adjacent bone as may be necessary to coadjust the part without the use of force.
- “ 4. That the dangers of the operation are much diminished by the careful use of antiseptic precautions.
- “ 5. The employment of the splint described facilitates very much the maintenance of the foot in good position, and renders the charge of dressing a simple and almost painless proceeding.”

Mr. R. CLEMENT LUCAS narrates the history of his case (aged 56) of *removal of a silver tracheotomy tube from the left bronchus*, with recovery of the patient, and draws attention to the following points:—

- “ 1. That in a person who has worn a tracheotomy tube for many years, a foreign body may become lodged in a bronchus without causing any great difficulty in breathing, and without exciting any grave symptoms of irritation, for a considerable period.
- “ 2. That instruments may be freely introduced into the trachea in such cases without fear of exciting serious bronchial inflammation.
- “ 3. That if a wire be used as a hook, it is very important that it should be of soft metal, lest it should become immovably fixed. The difficulties experienced in removing this tube were due in a good measure to a lack of proper forceps. The forceps used for the removal of foreign bodies in the trachea or bronchi should have blades which are small, light, and narrow, and about the length and width of those used for the urethra. They should be slightly curved throughout, but near the extremity of the handle the curve should be suddenly increased, the object being to allow the operator to work beneath the projection of the chin. The handles should cross slightly, so that the blades may be opened to a considerable distance by a slight separation of the handles.”

The next case is one of all but universal *paralysis in a child, following exposure to heat, with complete recovery*; reported by JAMES ANDREWS, M.D., and DYCE DUCKWORTH, M.D., and we record it at length as one of more than usual interest.

The child, aged 2½ years, was brought to St. Bartholomew's Hospital on the 28th July, 1876. She lay helpless and incapable of movement in her mother's arms. She was small and pallid, somewhat rickety, but fairly nourished.

On admission the face was a little flushed. The pupils were large and equal. Tongue clean and red. She was quite conscious, and could speak as well as most children of her age. Respiratory movement was mainly abdominal, jerky, and irregular, about fifty-six per minute. The chest was everywhere resonant, and the breathing-sounds weak. The position of the heart was normal, the sounds clear, and the pulse 156 per minute, regular and compressible. The abdomen was natural, save that the liver was an inch below the ribs on the right side.

Axillary temperature, 102.2° F.

She had complete loss of motor power both in legs and arms. She could move the left scapula, but not the right; could not raise her head from the pillow, nor could she support it when held up, but rotation from side to side was possible while she was in the recumbent position. There appeared to be anæsthesia of all the parts affected with motor paralysis. She sometimes cried when one of the toes was pinched hard. The muscles of all the limbs were extremely soft, wasted, and flabby. In the legs a strong faradic electric current excited only slight

reflex movements, but no muscles responded directly to this stimulus in any of the extremities.

The child lay on her back, and passed both feces and urine involuntarily, the bowels being frequently moved. No urine could be saved for examination. There was troublesome spasmodic cough, especially in the morning. Her appetite was good, and there was no sickness.

Her history was this: She was born in America, of Irish parents, and was a healthy child until her present illness began. While travelling by rail to New York, in very hot weather, on the 23d June, 1876, the child complained of severe headache, and was very ill. The same night she had pain all over her, was sick, delirious, and very thirsty. During the following week she got better. She had no loss of power, and could walk about. On the 1st July, while walking on the wharf, before embarking, during a very hot day, the child fell on her knees, and suddenly lost all power over her limbs. There was no loss of consciousness. The same evening she was delirious, and had no control of the sphincters. On the voyage she slept a great deal, was frequently delirious, and took very little food. She had diarrhoea, but was not sea-sick.

On admission into the hospital she was placed on light diet, with milk and arrow-root. Half a drachm each of cod-liver oil and syrup of phosphate of iron was ordered three times a day. Some meat was soon after added to the diet. In five days it was noted that no change had taken place in the child's condition. No sickness and no deliriousness had occurred. A strong faradic current produced only slight muscular contractions in the arms, none in the legs. The motions and urine were passed involuntarily, but some of the urine was obtained and found to be devoid of albumen.

On the 2d of August, at the suggestion of Dr. Gee, one-third of a grain of the extract of belladonna was given thrice daily, and a strip of belladonna plaster was placed down the whole length of the spine. The iron and cod-liver oil were continued, and two ounces of port wine were added.

Faradization to the limbs was practised daily. On the following day the tongue was clean and moist, the pupils somewhat dilated, and the cough was more frequent. The respiration and pulse were quickened, and the temperature had risen from 92° to 102° . The urine contained abundance of lithates. The chest and abdomen were covered with a scarlet erythematous rash, which faded on pressure. The same night the temperature rose to 103.6° . The next day the pupils were widely dilated, the rash had extended to the neck and thighs, and was fading on the chest and abdomen.

On the fourth day of the belladonna treatment it was noted that she could move the left hand a little. She took nourishment, and slept well. The rash extended to the head, and some redness extended over the sacrum. The belladonna was now increased to one and a third grains in the twenty-four hours; and in the evening, at 10 o'clock, on the fourth day of the belladonna treatment, the temperature reached 104.5° —the highest point it attained during her illness. Two days afterwards the temperature fell to 101.3° .

The next day a marked increase of power was noted in the left arm. She was able to raise it to her mouth, and feed herself; there was also increased sensibility in the left thigh. In a few days there was commencing power in the right arm and leg, but there was no control as yet over the sphincters. The temperature rose about one degree each evening, and reached 101° .

On the 12th August, sixteen days after admission, the child could raise both hands over her head, and feed herself; there was increasing power in the right leg, and sensibility in both legs. The pupils continued fully influenced by the

belladonna, but the tongue never became dry. The temperature varied from 99.4 to 100.6°.

On the twentieth day she was first able to control both sphincters. A powerful faradic current only caused very slight muscular contraction in the limbs, and on the twenty-fourth day stronger response was noted equal in the arms, but more marked in the right leg.

After being employed for twenty-one days, and on the twenty-fifth day from admission, the belladonna was omitted. Little improvement took place during the following week. She could put one foot in front of the other when held up. When lying down she was unable to crawl.

On the 29th of August her pulse was 156; respiration 44; and temperature 100.6°. The urine natural.

A drachm of the syrup of phosphate of iron and lime with one minim of liquor strychniæ was ordered thrice daily. On the 5th of September she was not so well. Her face was pale and puffy. The urine was "smoky," and contained one-tenth of albumen, also granular casts and blood-disks. The pulse was 76, and irregular; respiration 28; and the temperature was observed to be normal for the first time. In two days the pulse was more irregular, and the amount of albumen in the urine was larger. No pyrexia. Some sickness occurred at times.

On the 14th of September, ten days after the albuminuria was noted, there was only a trace of albumen in the urine, and the child could stand erect with a little assistance. The ophthalmoscope revealed nothing abnormal.

On the 10th of October, seventy-five days after admission to the hospital, she could stand and walk by herself around her bed. She gradually improved, and three months from the date of admission she was in good general health, and had perfect use of all her limbs and sphincters.

This case, the writers add, was one of profound nervous exhaustion.

The first symptoms of amendment were observed on the fourth day after taking belladonna, and gradual improvement ensued both in recovery of sensory and motor functions. The muscles were regularly stimulated with powerful faradic currents for several weeks till active response took place, and strychnia was given in small doses at a late period. It is added that cold affusion in the early period of such an attack would probably avert or at least tend to reduce the severity of the paralytic sequelæ.

W. S. F.

ART. XXVI.—*Pneumono-Dynamics*. By G. M. GARLAND, M.D., Assistant in Physiology, Medical Department, Harvard University. 8vo. pp. xi., 155. New York: Hurd & Houghton, 1878.

THE title of this pamphlet is by no means sufficiently descriptive of its object. The author states on page 3, that his intention is "to give a description of the true curve of flatness" (produced by pleuritic effusion), "to teach the proper way to search for it, to contribute certain experiments, which seem to throw some light upon the origin of the curve, and, finally, to discuss the diagnostic value of this much disputed symptom." While not at present denying that pneumonodynamics may have something to do with the explanation of the causes which produce this curve, we think a book so entitled would be the last place in the world in which one would be apt to expect an account of the physical signs of pleurisy.

Dr. Garland prefaces his work by certain definitions of the terms employed in his argument, which, though true in the main, are not remarkable for conciseness, or accuracy of expression. But apart from this, Dr. G. has really presented to

us a contribution to scientific medicine which deserves the highest praise for ingenuity and logical reasoning. We cannot help thinking, however, that his data are hardly yet sufficient for the extended deductions which he has drawn from them, but more of this directly.

Dr. Garland commences his essay by referring to the great diversity of opinions which have prevailed concerning the direction and form of the line of demarcation between pulmonary resonance and the flatness caused by pleural effusion, and then quotes several cases reported by Prof. Ellis, of Boston, in which this line is described as a curve, "which begins lowest behind, advances upwards and forwards in a letter S curve to the axillary region, whence it proceeds in a straight decline to the sternum." It is in the defence of this curve, with explanation and demonstration of the causes which produce it, that the book before us is mainly concerned.

After laying down a number of rules, the proper observance of which is necessary in order to detect this curve, the author then proceeds to detail in Chapter II. his four experiments upon dogs. These experiments consist in the introduction of various substances into the pleural sac of these animals, substances such as glue, plaster of Paris, and cacao butter, which can be introduced while fluid, and subsequently harden and preserve the form attained in the liquid state. When these injections were made in the upright position, the main points that he noted were, that the line of flatness obtained upon percussing the chest corresponded with the superior margin of the hardened injection, and that this line was always a curve, no matter what the position of the animal; that the lung was diminished in volume, but preserved its symmetry throughout; that the lower part of the lung was not compressed to an airless condition, and did not plunge into the fluid, the former rather appearing to rest upon the latter; no injection was present between the chest wall and the lung, except the merest little ridge, which never exceeded half an inch in height; the inferior surface of the model was concave in small injections, and corresponded to the arched upper surface of the diaphragm. When the dogs were injected in the oblique or horizontal position, he states that he has noticed that there was still the same curved line, and that in all the casts, there was one constant phenomenon, viz., the supporting of large bodies of fluid above their hydrostatic level. Recognizing this condition as analogous to that which must necessarily obtain in the case of effusions into the human pleura, uncomplicated by lung affections or adhesions, if the letter S curve is admitted as the normal expression of the line of flatness, Dr. Garland then, in Chapter III., seeks its explanation in a series of experiments made upon elastic bodies in inclosed spaces.

This chapter is decidedly the best in the book, and is a model of ingenuity in the conception of his experiments, and in the logic with which his deductions are drawn. We would like to transcribe the entire chapter, did not its length prevent. We are also struck with the accuracy and preciseness of expression employed, very different, indeed, from the looseness of phraseology employed in his "Introduction." While admitting, however, the accuracy of his experiments, and the truth of the statement on p. 43, that "the principles thus far developed are of universal application to retractile bodies inclosed in firm walls," we must beg to differ from the following clause, that these principles "hence may be, with propriety, applied to the retractile lung in the thorax." We need scarcely observe that this method of reasoning is open to several objections, not the least of which is the want of analogy between the rigid immovable walls of the glass flask employed in his experiments, and the elastic, movable, and moving walls of the thorax.

In Chap. IV. Dr. Garland considers the analogy between dogs' lungs and

elastic bodies in inclosed spaces, and here draws the conclusion that the agent which is the cause of this distribution of fluid above its hydrostatic level is the negative pressure exerted by the elasticity of the lung. The remaining eleven chapters are occupied with a general discussion of the subject in its various forms.

In Chap. XVI., as a summary of his work, he presents the following conclusions:—

I. That the letter S curve of flatness was first accurately described and traced through its various modifications by Prof. Calvin Ellis, of Boston.

II. That the letter S curve can be traced only in the erect position, and when the play of the lung is not hampered by adhesions; and that its persistence throughout the various stages of an effusion indicates the absence of adhesions in the lower part of the chest.

III. That the letter S curve of flatness corresponds in shape to the lower border of the lung, and in position to the line of apposition between the lower border of the lung and the upper border of the effusion.

IV. That the letter S curve is pathognomonic of a fluid effusion in the pleural cavity, but that it is impossible to judge from any variations in the curve as to the nature of the fluid present.

V. That the *dull* triangle which I have described corresponds to the posterior inferior part of the lung, and that this portion of the lung is not, in the erect position, separated from the chest wall by effusion until the amount of fluid has become relatively very large.

VI. That a recognition of the *dull* triangle is very important for the detection of the curve of flatness, especially in cases of hydrothorax, when the neglect of this region has led to the general but erroneous idea that the surface of a pleural transudation is horizontal.

VII. That an effusion does not immediately intrude between the lung and the lateral chest wall, but that such intrusions occur last of all, whatever be the position of the patient.

VIII. That a pleuritic exudation does not compress the lung in the manner universally taught, but that, on the contrary, the effusion exerts a negative pressure by virtue of its weight.

IX. That the lower part of the lung does not become first compressed, and then plunged into the fluid beneath, but that the entire lung contracts symmetrically throughout.

X. That the lung does not, properly speaking, swim upon an effusion, but that, by virtue of its retractility, it supports the entire body of the effusion, together with the diaphragm, until the weight of the fluid exceeds the lifting force of the lung.

XI. That the position and shape which the lung assumes when associated with an effusion are determined by the balance between the weight of the fluid and the elasticity of the lung.

XII. That the position and shape which the effusion assumes are determined by the varying degree of retractility in different parts of the lung, and by the position of the patient, complications, of course, being left out of consideration.

XIII. That the excess of weight of an effusion is free to act upon the diaphragm, according to its specific gravity.

XIV. That the diaphragm does not bag down until the weight of the effusion exceeds the lifting force of the lung, and the same holds good for obliteration of the intercostal depression.

XV. That the heart, mediastinum, etc., are not pushed out of place by an effusion, whether of air or of fluid, but that these parts are drawn over by the opposing lung. Enormous effusions may, of course, increase the displacement.

XVI. That friction sounds in the early stage of pleurisy are not interrupted by the effusion separating the lateral pleural surfaces, but that they cease because the respiratory muscles of the affected side are weakened, and unable to cause sufficient motion for the production of these sounds.

XVII. That the negative pressure of the lung favours absorption into the pleural cavity.

XVIII. That the action of the intercostal muscles favours absorption *out* of the pleural cavity during inspiration.

XIX. That the negative pressure of the lung favours the diastolic repletion of the heart, as shown by Marey and others; and that impairment of the retractility of the lung must therefore be accompanied by symptoms of imperfect heart supply, such as cardiac irregularity of action, diminished tension of arteries, and venous stagnation, as suggested by Dr. T. B. Curtis.

"As I have previously stated, most of the points in this summary I consider to be original with myself, while others have been merely demonstrated in this book in an original and, as I think, conclusive manner."

Basing our opinion upon what Dr. Garland has himself conceded, and quoted in other portions of his book, we cannot but think that he has overestimated the amount of originality which he has brought to bear upon his subject, since nine of the above nineteen conclusions are original with other observers, and to which Dr. G., as far as we can see, has added nothing new either in mode of demonstration or subject-matter. In fact, with the exception of conclusion XIV., he has not attempted to demonstrate any one of them, resting content with the mere statement of the observations of others.

On the other hand, before we can accept as final the results embodied in the remaining conclusions, more notably in VII. and XVI., we must have more proof of the correctness of the facts and theories here so positively asserted. No one can deny the value of physiological experiments in the explanation of pathological facts, but those experiments are only of value in that they accord with those clinical facts.

Even in the meagre details of the cases reported in the beginning of his book as typical exemplifications of his theories, we find points which conflict with those theories, or at least certainly require explanation. For example, in Case IV. (p. 10), it is stated that there was well-marked ægophony heard over the region of flatness. The theory usually accepted as explaining this phenomenon is that the voice is rendered tremulous and vibratory in its passage through a thin layer of fluid lying between the two layers of the pleura. But according to Dr. Garland's statements, no such layer exists, hence he should at least have offered some other explanation.

Then his explanation of the disappearance of the friction-sound in pleurisy, as due to paralysis of the respiratory muscles from pain, is decidedly inadequate. That expansion to a considerable extent of the lung on the side affected with pleurisy does take place, and consequent motion of the pleural surfaces, one upon the other, is proved in Case III. (p. 9), where it is stated that above the line of flatness "respiration was heard everywhere accompanied by moist râles on inspiration, and sibilant and sonorous râles on inspiration and expiration;" and on the next day, the line of flatness remaining unchanged, "normal respiration was heard to the base, along the spine, and from one or two inches outwards, the area on which it was heard increasing towards the upper part." This certainly shows that there must have been a considerable degree of motion in the affected side, and yet we have no note of a friction-sound. Then, again, as regards the cessation of respiration from *pain*, it is well known that the actual pain of pleurisy is usually much more acute in the first stage of the disease, when there is merely inflammatory roughening of the pleura with no effusion, and that the occurrence of exudation is often marked by the entire cessation of pain on respiration. Nor, again, if we explain the area of flatness as occupied by fluid to the *entire* exclusion of lung tissue, would we expect to hear *any* breath-sounds over this region; yet in Case III. it is stated that vesicular and bronchial breathing were heard over a portion of the region of flatness. We can hardly suppose that a body of fluid situated entirely below the lung would conduct sounds generated in that lung to

the chest-wall; and if Dr. Garland will not allow that there is enough motion on the affected side to move the pleural surfaces one upon the other, we do not see how he can consistently explain these breath-sounds heard over the region of flatness as due to the vibration imparted to the walls of the chest by the expansion of the lung. This explanation may possibly apply to bronchophony, but, certainly, in our opinion, not to normal vesicular respiration, which, as quoted above, is said to have been noticed in one case over the region of flatness.

We must confess that we have closed this book with a feeling of disappointment. Dr. Garland's conception of the case has been entirely from a physical point of view. In the excellence and thoroughness of his purely physical investigations, he has been led to overlook the fact that in pleuritic effusions we are not dealing alone with a simple elastic body, always tending to contract, in a firm, rigid, unmovable receptacle; but that in the thorax we have an elastic body, which, while at one instant contracting through its own elasticity, at the next, in spite of that elasticity, is expanded by a far greater force; a body that is situated in movable walls, walls whose own elasticity has been estimated as more than double that of the lungs.

In conclusion, we do not wish to be understood as denying the *possible* truth of Dr. Garland's conclusions; we think that they are simply "not proven." What is needed is a more extended series of experiments in their support, and then their verification by an extended series of clinical facts.

R. M. S.

ART. XXVII.—*Ueber Percussion der Knochen. Vortrag Gehalten am ersten Sitzungstage des VI. Congresses der Deutschen Gesellschaft für Chirurgie zu Berlin, Am. 4. April, 1877.* Von Dr. A. LÜCKE, Professor der Chirurgie in Strasburg. *Archiv für Klin. Chir.* xxi. 1877.

On the Percussion of Bones. By Dr. A. LÜCKE, Professor of Surgery at Strasburg.

THOSE who are conversant with the history of medical therapeutics are aware of the immense influence that is exercised by new and improved methods of investigation in promoting the development of the healing art. Physical diagnosis, for example, by discarding the uncertainty of subjective symptoms, has established safer grounds for medical interference. Where in former years the physician had to be content with establishing, often by a very circuitous process, a diagnosis of greater or lesser probability, the scientist of to-day, drawing on his copious resources, demonstrates with comparative ease and almost absolute certainty the seat, the nature, and the danger of a malady. This marvellous progress is in great measure due to the introduction of the laryngoscope, the endoscope, the ophthalmoscope, the rhinoscope, and similar contrivances, which enable the modern practitioner to employ exact modes of inquiry. By the agency of such instruments we remove the doubtful character of many diseases, and in so doing improve our chances of successful treatment. Indeed, if in our times we can ascertain the incipience of disease where our predecessors failed to perceive any modification of normal existence, and if we are thus enabled to avert calamity by a timely remedial interference, we are assuredly nearing the ideal goal of therapeutics, *i. e.*, prophylaxis.

The object of this notice is to call attention to *the percussion of bones*, which promises to become an important means of facilitating the diagnosis of morbid changes in their structure. This method, the adaptation of an old principle to

new purposes, originated, and has been practised for some time, at the surgical clinic at Strasburg, by Dr. A. Lücke. Dr. Lücke states that:—

“The percussion of bones may be performed, in the first place, to ascertain their painfulness and extent. It is true, we have attempted to do this all along by squeezing, pressing, and tapping the bones with our fingers. But the results obtained in this way were insufficient and unreliable. I have, therefore, employed the percussion hammer, and the ordinary ones being found inadequate, I have constructed a special bone-hammer, and employ two different kinds of this new instrument. One rather large and solid, the other somewhat modified and smaller than the first. Both have an acorn-shaped point made of eucouthone.”

The handle of the hammer is made of whalebone and is very thin, so that it readily vibrates at the slightest touch. To further facilitate an extensive swinging motion, the head is made of metal, to which is attached a hard-rubber point. To determine the degree of painfulness in a given case by this method, we must direct our attention to the possibility of mistaking the normal sensitiveness of an individual with the corresponding pathological symptom. In order, therefore, to avoid errors of diagnosis from this source, we should never neglect to practice comparative percussion of the corresponding bone of the healthy side. The hammer may be employed very gently, with moderate strength, or very energetically; the force of application will, in each case, be determined by the situation of the bone, and the nature of the disease. Percussion, applied to the bones, accurately determines the amount of force necessary to produce pain; and percussion also ascertains the precise quality of any existing painfulness. For example, when the patient complains of severe aching on gentle percussion, and the pain becomes intensified as we percuss more forcibly, a superficial affection may be diagnosed. When, on the other hand, the pain is felt only on strong percussion, the seat of disease is deeper in the bone, or in a neighbouring one contiguous to it.

The diagnostic value of this new method is strikingly illustrated in a case briefly alluded to by Lücke, which involved the discovery of disease in the astragalus, and afforded an opportunity of observing the excellent results achieved by the early removal of degenerated bone. At first direct percussion of the astragalus was attempted, but, on account of the swelling of the capsular ligaments and synovial membrane, the results obtained were not sufficiently reliable and characteristic to justify a definite diagnosis. This plan was accordingly abandoned, and Lücke undertook the percussion of the posterior projection of the os calcis. When this was performed in the direction of the long axis of the foot, great pain was at once complained of, but there was no sensitiveness to percussion in other directions. Moderate percussion, both of the external and internal malleolus, produced very little pain, but no sooner was it made at all forcible than the patient experienced severe aching. Lücke, therefore, diagnosticated central otitis of the astragalus, and the subsequent successful operation verified his conclusion.

Bones may, likewise, be percussed to determine differences of resonance depending on their structure. Dr. Piörny mentions this application of percussion. This author distinguished the specific bone resonance from the dull sound of surrounding tissues, but he mentions the fact as a casual observation rather than an important discovery. Lücke may, therefore, justly claim the merit of conscientious investigation, and due appreciation of the importance of bone percussion. He was the first to demonstrate the feasibility of utilizing the results to be obtained by careful attention to comparative percussion of healthy and diseased bones. He was also the first to show how the normal percussion sound of bones may become altered by pathological processes; and he likewise measured the extent and quality of this modification in the principal osseous affections. He

finally ascertained that percussion may be employed with two ends in view, namely, the determination of pain and the observation of resonance, and proves that the one elucidates and supplements the other.

Experience has shown that "*the shaft or diaphysis of long bones gives a deeper, duller percussion sound than their extremities or epiphyses.*" Moreover, the sound emitted by a bone is entirely independent of its connection with a joint or its contact with surrounding parts; and Lücke has demonstrated that the cause of the difference in the sound must be looked for in the essential structure of bones, and not in any accidental circumstances accompanying the mechanism of their fixation in the body.

The following kinds of sound have been observed as characteristic of bones: "*high sound, low sound, dull sound, short or high sound, and hollow sound.*"

We recognize the sound-pitch of the spongy tissue of bones as higher than that of their compact substance. Here the difference of sound is based on the physical structure of bone, the compact tissue containing very small cavities with an abundance of solid matter between them; whereas the spongy tissue contains relatively large spaces, and shows a comparative diminution of solid matter.

Perussion of the bones may be advantageously employed to establish, correct, or verify diagnosis. It will be found serviceable in the early discovery of osseous diseases, and pre-eminently so where the affection is more or less centrally located. For the sake of accuracy it becomes indispensable to compare the percussion sound of a suspected bone with that of the corresponding bone of the normal side. And in thus carrying on a comparative percussion of homologous parts, care should be taken to avoid errors from accidental resonance. Whenever the individual conditions of a given case were such that the extremities could be freely suspended in the air, Lücke always chose percussion in that position. When, for example, the tibia was percussed, the patient's foot was grasped by an assistant, the limb was lifted from the bed, and held in the air till percussion was completed.

Our present knowledge of bone-sounds may still be said to be in its infancy. Nevertheless several well-authenticated facts have already been ascertained. Thus we know that, when congestive hyperæmia or infiltration of the marrow exist, a certain dullness of percussion-sound is its pathological symptom.

Ostitis, osteomyelitis, and suppurative osseous diseases are likewise characterized by dull sound. This statement holds good both for the shaft and extremities of long bones, and careful autopsies have confirmed its truth. Wherever osseous substance is abnormally thick, a similar pathological dullness may be ascertained. In like manner exostoses, hyperostoses—osseous hypertrophies generally—give a dull sound.

Consolidated fractures, even those of long standing, sometimes emit a peculiar dullness, and in such cases an incomplete or misshapen medullary canal is probably the cause of the symptom. Osseous cicatrices have a duller sound than the bone substance surrounding them.

All inflammatory processes are marked by a perceptible dullness, and we also invariably find a decidedly increased sensitiveness. In this way percussion becomes doubly serviceable, first, by determining the extent and nature of an affection, and, secondly, by locating with precision its seat in the bone. Of course, wherever our sense of hearing can be assisted by ocular inspection, visible changes of form or colour will afford an additional clue to the correct diagnosis. But the vast importance of percussion depends on the fact that through its instrumentality we may reveal disease where the eyesight fails to ascertain it.

We have lately learned to attach great weight to the timely recognition of

ostitis, especially in articular extremities of bones. Prof. T. Kocher,¹ in Bern, has demonstrated the possibility of precluding disease of a neighbouring joint by opening the bone, exposing the seat and nature of the trouble, and effectually removing or destroying any focus of irritation that may be discovered. Here, again, to facilitate the detection of degenerated centres, percussion will be found valuable.

The high percussion-sound and the hollow sound remain to be considered. The former is found wherever the osseous tissue is very compact and dense, as, for example, in osteosclerosis. Fungoid growths or granulations encroaching upon the bone substance of a joint and eroding its cartilages bring about a prominent change of sound, making it higher and shorter than it would be in the normal condition of the joint. The hollow sound is most frequently also a high sound, and occasionally it may even partake of the nature of tympanitic resonance. It is found accompanying osteoporosis.

It follows from what has been stated that percussion may also materially assist us in fixing with precision the spot where operation should be performed. Lücke thinks that percussion will teach us where and when to be very cautious in the execution of common operations or manipulations, and whether the usual *modus operandi* can be safely adhered to or must be essentially modified. As an example, he puts forward the forcible extension of articular contractions, an operation which may unexpectedly result in fracture, if we have failed to recognize an existing osteoporosis.

From the results already obtained, it may be safely inferred that this method may become an efficient and valuable aid to diagnosis. E. C. W.

ART. XXVIII.—*Lectures on Clinical Medicine; Delivered in the Royal and Western Infirmaries of Glasgow.* By DR. McCALL ANDERSON, Professor of Clinical Medicine in the University of Glasgow. With illustrations. 8vo. pp. 268. London: Macmillan & Co., 1877.

DR. ANDERSON has been hitherto principally known in this country as a dermatologist; his work on skin diseases being one of the best which has recently been issued from the English press. It is probable that he still retains a preference for this specialty, since he devotes the two concluding lectures in the book under notice to diseases embraced in this branch of medicine. There are, in all, seventeen lectures, in which various subjects are discussed, the principal among which may be said to be aneurism of the thoracic and abdominal aorta, acute phthisis, hysteria, spinal irritation, tubercular peritonitis, disease of the pons Varolii, and spinal irritation. In the first lecture he gives some illustrations of the recent advances and discoveries in the field of practical medicine, while the second he devotes to the discussion of pain as a symptom of disease.

In his lectures on aneurism of the arch of the aorta, he gives the histories of three cases, which were treated by galvano-puncture. In the first case the treatment utterly failed to arrest the course of the disease, which was already far advanced when it was first instituted. In the second, great improvement was effected by it, and it is possible that it might have resulted in a perfect cure, if

¹ Zur Prophylaxis der fungösen Gelenkentzündung mit besonderer Berücksichtigung der chronischen Osteomyelitis und ihrer Behandlung mittelst Ignipunctur. Volkmann's "Sammlung klinischer Vorträge." No. 102. Leipzig, 1876.

the patient's means had enabled her to lead a life of repose. Instead of this, however, she was obliged to earn her living by hard labour, which brought on a relapse. In the third case, the sac became smaller and harder under its use, and the pulsation less, showing that some coagulation had taken place. The patient's condition could, nevertheless, hardly have been considered satisfactory, inasmuch as he continued to spit blood, and to suffer from dysphagia. These results are certainly not such as to justify this treatment, until a fair trial has been given to that of the iodide of potassium in large doses, combined with rest and a restricted diet.

Dr. Anderson contends that acute phthisis is a disease which may sometimes end in recovery, and that this result may, in some cases, be brought about by appropriate treatment. The cases which he reports to sustain this position are evidently cases of catarrhal pneumonia, involving the apex of the lung, and accompanied by typhoid symptoms. That catarrhal pneumonia generally precedes acute, as well as many forms of chronic, phthisis, will, we think, be generally admitted by the majority of careful observers of disease at the present day; and that cases occasionally occur, in which recovery takes place, even after the symptoms have seemed to indicate the existence of serious disease of the lungs, will, we think, also be cheerfully accorded. We say seemed to indicate, because a careful physical examination of the chest will generally show that this is not really the case. In the cases reported by Dr. Anderson, the physical signs are said to have been dulness at one or both apices, and musical râles heard everywhere over the chest. These are not, it need scarcely be said, the signs which accompany a breaking down of the lungs. The treatment which was employed by the author is essentially antipyretic in character, cold water being freely used as an external application, and a pill resembling that recommended by Niemeyer, except that it contains a larger amount of digitalis, being administered internally.

Dr. Anderson also contends that tubercular peritonitis is not necessarily a fatal disease. Recovery having followed the use of iodide of potassium, pancreatic emulsion, cod-liver oil, and cold-water compresses to the abdomen, in a case which was under his care. It might be objected, of course, that he had mistaken the nature of the disease, but he is supported in his opinion by the testimony of other competent observers, among others by Dr. G. Hilton-Fagge, who says in the course of a paper on diseases of the liver and peritoneum, in the *Guy's Hospital Reports* for 1875 (see number of this *Journal* for January, 1876), that he has seen several instances in which there was reason to believe that recovery from it took place: in one case, indeed, the diagnosis has been afterwards proved to be correct by a post-mortem examination. But the most remarkable case of recovery from tubercular peritonitis is that recorded by Mr. Spencer Wells and referred to by Dr. Fagge in his paper. The patient, a female, æt. 22, was believed to have an ovarian tumour. She had twice been tapped, eighteen pints having, on one occasion, been drawn off. It was decided that ovariectomy should be performed, and Mr. Wells made a small incision. But he found that the peritoneum was studded with myriads of tubercles. He pumped out all the fluid, and closed the wound. The patient went through a sharp attack of peritonitis, but got well. Four years afterwards she married. She had no children. But six years later she was still stout, hearty, and well.

In the lecture in which the author discusses a few of the diseases of the skin, he calls attention to a form of eruption which he has frequently observed; but which, he says, does not seem to have arrested the attention of physicians. He calls it *lupus verrucosus*, and thus describes its principal symptoms:—

It always occurs, he says, in strumous subjects, and “commences by the development of small, circumscribed, dusky-red, or violet patches, often in the form

of tubercles. Sometimes these are isolated, oftener confluent, so as to form patches of irregular outline and of variable size, as large even, they may be, as the palm of the hand. I [he] have observed the subsidence of some of these without undergoing a further development, while others have advanced to suppuration; but, in the majority of instances, they become covered with wart-like excrescences, and then these violet-coloured warty patches present an appearance which, once seen, can never be mistaken or forgotten. The warty formation can be readily picked off without any, or, at all events, without much, pain; but a new excrescence gradually grows in the place of that which is removed. The patches beneath the excrescences are not ulcerated, as might be expected, but the papillæ are greatly hypertrophied, project in the form of filaments, which may even exceed a couple of lines in length, and bleed on the removal of the warty mass. The latter is marked on its under surface by depressions corresponding to the elongated papillæ just referred to, and is composed entirely of epidermis."

The disease does not seem to be of frequent occurrence, for it was met with only nine times in 5174 cases of skin diseases treated consecutively at the Dispensary for Skin Diseases in Glasgow. Its frequency, as compared with that of the other varieties of lupus, may be gathered from the fact that during the same period sixty-seven cases of the latter came under observation. Its prognosis is, the author says, invariably favourable, although a cicatricial appearance of the skin is left; but this is of less consequence than in the other varieties of lupus, as it rarely, if ever, appears on the face. The treatment comprises the usual antistrumous remedies; cod-liver oil, phosphorus, and iron being especially indicated.

In the same lectures will be found reported an interesting case of ephidrosis cruenta, or hæmidrosis, a disease which the author believes principally occurs in connection with amenorrhœa, being, in effect, a species of vicarious menstruation. The discharge became less as the menstrual function was re-established. Dr. Anderson also gives the details in a case of elephantiasis Arabum, in which great improvement followed the ligature of the femoral artery. In two cases which have come under our own observation, the relief from this operation was only temporary, the disease returning in full force a very short time after the patients left their beds, and we are therefore inclined to attribute part of the result to the enforced rest which this treatment necessarily imposes.

The book, as we have shown, contains the reports of several interesting cases which have evidently been carefully and intelligently observed; but the remarks which these have suggested, although always instructive and appropriate, are scarcely full enough to justify their author in calling them clinical lectures. There are several handsome illustrations, and the printing and paper are excellent.

J. H. H.

ART. XXIX.—*Internal Urethrotomy with its Modern Improvements.* By EDWARD LUND, F.R.C.S., one of the Surgeons to the Manchester Royal Infirmary, and Professor of Surgery in the Owens College. 8vo. pp. 33. London: J. & A. Churchill, 1877.

THE author of this essay directs attention to the permanent cure of urethral stricture by internal incision, and illustrates his subject by the details of a stubborn case of finely contracted coarctation complicated by perineal fistules, in which, after patient efforts, a Maisonneuve's conducting bougie finally opened the way for a flexible gum catheter and a urethrotome, with which division was

effected from before backwards. After the introduction of moderately large solid instruments, at increasing intervals, the fistules closed, and a "complete recovery" ensued, the urethra admitting "with perfect ease a No. 12 English silver catheter."

The American surgeon will scarcely regard Mr. Lund as the *Edipus* who has rightly solved the riddle of the permanent cure of stricture. After cutting the obstruction, he says: "On the third, or sometimes even the fifth, day after the operation I pass a *bongie-à-ventre* of the size I have mentioned as corresponding to a No. 17 English, or, if there is any doubt of its passing readily, one of two sizes smaller, corresponding to an English No. 15 or 13. This I repeat after a second interval of five or perhaps six days, then for three times at an interval of a week, then after an interval of fourteen and subsequently of twenty-eight days; it being part of the system that, having once secured a full incision, laceration, and dilatation of all the resisting fibres of the urethra, there is no fear of such an amount of contraction as to bring back the urethra to its previous abnormal dimensions."

It will be perceived, from the above extract, that our author overlooks, first, the very important fact that the calibre, or rather the distensibility, of the urethra, varies in different persons: and, secondly, forgets that to bring the strictured portion up to the size of the normal passage, which is the only rational plan of treatment, it is essential to ascertain, in each individual case, the natural capacity of the urethra by previous measurement with the urethrometer. These are certainly to be ranked among the "modern improvements," and their neglect is fatal to good practice. Moreover, in limiting himself to a No. 26 French solid belled *bongie*, which he erroneously says corresponds to a No. 17 English, but which is only slightly longer than a No. 15 English, or in the event of its not passing readily, to one of two sizes smaller, we are unable to see how he can "secure a full incision, laceration, and dilatation of all the resisting fibres," unless he be operating upon a urethra the distensibility of which does not exceed the numbers mentioned. In thus fixing a standard, he wrecks his whole system, since it is obvious that he will often fail to discover a stricture, much less cure it, if his largest instrument is less than nine millimetres in diameter. So confident, however, is he of success that he formulates the axiom which concludes his paper, "Give the operation a fair trial, and let your strictures cease."

As a means of effecting a permanent cure we cannot indorse Mr. Lund's practice, but we may congratulate him on having made a slight advance over the course pursued by those English surgeons who follow the dicta of Sir Henry Thompson. His remarks upon the employment of filiform *bongies* in the management of very narrow or tortuous strictures are most judicious; and we heartily commend his advice as to the preliminary and subsequent treatment, the former being directed to the relief of the concomitant congestion and spasm, and the latter to averting or mitigating an attack of urethral fever. S. W. G.

ART. XXX.—*The Science and Art of Surgery; Being a Treatise on Surgical Injuries, Diseases, and Operations.* By JOHN ERIC ERICHSEN, F.R.S., F.R.C.S., Surgeon Extraordinary to Her Majesty the Queen, etc. Revised by the author, from the seventh and enlarged English edition. 2 vols. 8vo. pp. 947, 989. Philadelphia: Henry C. Lea, 1878.

THE position of Erichsen's *Surgery* was long ago established; will the present edition serve to maintain it? Is it fully up to the times? Are the new things

noticed, the changes in theory and practice considered, the old errors corrected? Among the general subjects that have particularly engaged the attention of surgeons during the last five years are *anæsthetics*, *antisepctic-surgery*, and *bloodless-operating*. What says our author respecting them. In the edition of 1873, ether seemed to be regarded as decidedly a more proper anæsthetic to be used than chloroform, because of its being "certainly a safer agent." In the present edition, chloroform is apparently restored to favour, as being more convenient and more applicable to certain cases; though the risk of death being produced is confessed to be somewhat greater where it is used than where ether is employed, since "ether less frequently than chloroform produces a direct toxic effect on the heart." In this acknowledgment lies, we believe, the answer to the question, "which anæsthetic shall we use?" Ether is the safer, therefore ordinarily should be employed, without regard to all the disadvantages, real or imaginary, attending its administration. Attention is very properly called to the danger of its use in cases in which the actual cautery, thermo-cautery, or galvano-cautery is likely to be brought "in the neighbourhood of the mouth or air passages." We have ourselves seen one quite sharp explosion from the ignition of ether vapour, consequent upon the use of Paquelin's thermo-cautery in a case of removal of the tongue.

The antiseptic treatment of wounds, and subjects connected therewith, are treated of much more fully than before. Assuming that "the decomposition of the fluids of a wound is due to their infection by septic matters . . . in the vast majority of cases from without," Mr. Erichsen asks: "How does the air infect?" Without pronouncing definitely for or against spontaneous generation, he accepts the fact of the existence in the air of germs, or, at least, solid particles, and looks to them "as the true infecting agents, conveyed to and implanted on the surface of open wounds by the air in which they float suspended in countless myriads. . . . They are organic or inorganic. The organic particles may be living or dead. But though dead, they may still be capable of infecting an open wound on which they are deposited."

The practical conclusion drawn is: "Keep out infection, and local destruction followed by constitutional contamination is averted. Admit it, and every evil, to those most terrible of all, hospital gangrene, and pyæmia, may occur." Considerable more space than before is given to the description of the "Lister method," with its essential details, and notice is made of the use of boracic and salicylic instead of carbolic acid. Of the salicylic acid it is said that "experience has shown that it is not less irritating: so that, except in cases in which the smell is unbearable to the patient, it presents few if any real advantages over carbolic acid." The conclusion of the whole matter is:—

"That the antiseptic treatment has been of much service in the prevention of the infection of wounds, more especially in old, crowded, and pestilential hospitals, there can be little doubt. We have, however, unfortunately as yet no definite data by which to judge the comparative merits of this, and other modern methods of treating wounds. The general recognition by surgeons of the necessity of the free drainage of wounds with or without the employment of antiseptics, has undoubtedly tended more than any one single improvement in practice to lessen those evils which necessarily result from the decomposition of pent-up fluids in contact with raw surfaces. So also the general employment of disinfectants of all kinds, and the great attention that is now bestowed on hospital hygiene in the recognition of the importance of abundant air supply and free ventilation, of the evils of over-crowding, of the necessity of care in the distribution of patients, and in the avoidance of all carriers of infection, such as sponges, instruments, clothes, etc., have greatly tended to improve the sanitary condition of most hospitals, and to lessen the liability to the generation and diffusion of septic disease. The intro-

duction of the antiseptic treatment being contemporaneous with the general adoption of improved hospital hygiene, the patients subjected to this treatment necessarily participate in the advantages that flow from exposure to sanitary conditions that have been so much altered for the better. Hence it is not reasonable or just to ascribe a diminution of the amount of septic disease in a hospital in which the 'antiseptic method' is employed to that alone, and to the exclusion of all other causes. Either hygiene is of no value in surgical cases, or some and probably no inconsiderable share in the improved results must in justice be assigned to the generally ameliorated sanitary conditions."

Under the general head of "performance of an operation," "bloodless methods" are referred to, *bandaging*, *Lister's method*, and *Esmarch's*, the latter being pronounced the most perfect and of "more advantage in operating on diseased bones and joints, and in the removal of tumours than in amputation." It is stated that neither the production of sloughing by its use or secondary hemorrhage is "supported by evidence," and "no case has been recorded in which the products of inflammation or clots in the veins have been driven on into the circulation by the application of the elastic bandage." In the chapter on "aneurism" notice is taken of Reid's successful employment of this bandage in the treatment of popliteal aneurism, and it is declared that "this means is applicable to many external aneurisms, and evidently deserves a further trial."

In the chapter on "Pyæmia" the subject of septicæmia has been treated of much more fully than before, notice being taken of the results of the numerous experimental investigations made during the last ten years.

Very many changes have been made in the chapter on "Tumours," both as respects pathology, classification, and arrangement. The sarcomata are all treated of together, and at considerable length; an additional group of cancer, the adenoid or glandular, is made; the stroma, the existence of which as properly belonging to the cancer was previously "much disputed," is now declared to be present, and to "deviate as much as the cells from the normal structure of the affected part." The three chief views of the origin and growth of the cancer "at present held by pathologists of high repute" are noticed, and the epithelial theory of Thiersch and Waldeyer most inclined to, though "the question is necessarily of great difficulty and presents a large field for further inquiry." The local or constitutional origin is considered at much more length than previously, the conclusion being that:—

"1. cancer is primarily a disease of local origin; 2, it is often occasioned by the direct action of local causes; 3. it is pre-disposed to by various local conditions, physiological as well as anatomical; 4, like all other local diseases, it is under the influence of age, sex, habit of body, and hereditary constitution; 5, and although once originating locally, its development is favoured by constitutional conditions; 6, there is no evidence of the existence of any constitutional state that can primarily, *per se*, and independently of any local cause, functional or organic, develop a cancer."

The chapters on "Fractures and Dislocations" are much as in the previous edition. The starch bandage is still given much more prominence than it would seem to deserve at the present time, since it has been so largely superseded by other forms of the immovable dressing. The statement is still made that under its use "patients are frequently cured without any appreciable shortening." Notice has been taken of subcutaneous osteotomy in cases of badly united fractures, and of Nussbaum's transplantation of bone in a case where a portion of the ulna was lost; but not of the plan of wiring the bones together in cases of non-union. Nothing is said of Gordon's over-extension theory of the production of fracture of the lower end of the radius, although his splint is figured and referred to.

Nélaton's line and Bryant's ilio-femoral triangle are described, as also Hamilton's

method of treating fractures of the femur in young children, of which method the author says "I can speak from experience of its use of the very great advantages of this method."

The ring treatment of fractures is still credited to Eve. Under the head of the reduction of the dislocated hip by manipulation an interesting account is given of the first employment of the method by Thos. Anderson, of Leith, in 1775. No reference is made to Allis's sign of sciatic dislocation, that furnished by the difference in length when the limb is extended and when flexed on the trunk. (*Phila. Medical Times*, March 28, 1874.)

In the chapters on "Aneurism," the author has for the first time treated of aneurism of the abdominal aorta; has made a more extended notice of the treatment by flexion and galvano-puncture; has given Maunoir, of Geneva, and Knight, of New Haven, credit for first successfully applying the one flexion, the other digital compression; has noticed the treatment by hypodermic injection of ergotin ("which cannot be considered of a hopeful character"), and by mechanical means ("as useless as they are unscientific"); and has enlarged somewhat his statistical tables. More than eight years ago numerous mistakes in these tables were noticed in the late Dr. Blackman's review of the edition of 1869, and yet the greater portion of them still stand uncorrected; and some of the more recent ligations of the large trunks have not been tabulated.

The section of the work devoted to the "diseases of the genito-urinary organs" is introduced by a chapter on the "secondary diseases of the urinary organs arising from surgical causes," contributed by Marcus Beck; a chapter of much value, and so written as to render easy of comprehension a subject often not understood by students and practitioners. It is, as heretofore, recommended to use a gum-elastic tube after lithotomy—as is well known such tube is dispensed with by the majority of American operators. The advice is now given to carry the finger along the upper or concave surface of the staff in operating upon boys. (Similar advice was given by the former American editor, Dr. Jno. Ashhurst, Jr., in his work on Surgery.) Notice is taken of Dulles's statistics of the high operation—as also of Dolbeau's *perineal lithotomy*, "the results of which do not either appear hitherto to have been very brilliant or satisfactory." In treating of "enlarged prostate" it is still advised to use the metallic catheter, though the soft catheter is referred to in the paragraph on "retention." We are confident that by the majority of practitioners, the Nélaton catheter will be preferred, as by its use the bladder can often be entered with ease after repeated failures with the silver instruments. The use of the aspirator is not referred to in connection with "the relief of retention from enlarged prostate when no instrument can be introduced into the bladder in the ordinary way;" though it is duly noticed in treating of retention from stricture, and declared to be "upon the whole the simplest method of treatment and to be preferred to any of the preceding plans, in the first instance at all events." The views of Otis on the subject of gleet are mentioned, as also his urethrometer and dilating urethrotome. Of gonorrhœal rheumatism it is now and for the first time stated that "it is a disease that appears to be closely associated with some forms of blood-poisoning, possibly in some cases with pyæmia." Olive-headed sounds and bougies à boule for exploratory purposes are noticed; but, as before, metallic instruments are declared "decidedly preferable in the early stages, and when the stricture is tight, cartilaginous, and of old standing;" certainly a dangerous statement to make to students, and those of limited practice in the use of urethral instruments.

But the length that this bibliographical notice has already reached, warns us that we must hasten to a close. Before doing so we may call attention to a few other new things that we see have been noticed; viz., extirpation of the larynx

(pronounced "at best a barren triumph of surgical skill"); Maunder's use of the chisel in subcutaneous osteotomy; Morrant Baker's vulcanized trachea tube; Sayre's plaster jacket; and the use of the elastic ligature in cases of fistula in ano. So far as we have had time to examine, there is an entire absence of any reference to Maunder's excision of the lower jaw through the mouth, of excision for the relief of bunion, of nephrotomy and extirpation of kidney, of subcutaneous osteotomy in cases of rickets, and of the treatment of hydrocele by electricity. The present edition, like its predecessor, is in two volumes, each of which is now separately indexed; the illustrations are more numerous and are better engraved. Though many of the faults of previous editions, that ought long ago to have been corrected, may still be discovered, yet every one will be satisfied on inspection that "much new and important matter has been added;" and the work will continue to be one of the favourite books of "the surgical profession of the United States," to which the present edition is dedicated.

P. S. C.

ART. XXXI.—*Vorlesungen über Allgemeine und Experimentelle Pathologie.* Von Dr. S. STRICKER, o.ö. Professor der Allgemeinen und Experimentellen Pathologie in Wien. 1 Abtheilung. Wien: Wilhelm Braumüller, 1877.
Lectures on General and Experimental Pathology. By Dr. S. STRICKER, Professor of General and Experimental Pathology in Vienna. Part First. Vienna, 1877.

EVERY physician is to be regarded as more or less of a pathologist. From the time of Morgagni, he has been diligently searching for the seats and causes of disease, less for the sake of knowing them, than for the practical results to be derived from his knowledge. From the very outset of his career, and in all times, he is called upon for the explanation of this or that effect—usually some prominent symptom—and answers with a varying degree of readiness, according to the predominance of certain factors among the vast number which have brought him into his present surroundings. As a practical pathologist, his knowledge is chiefly special, and has largely resulted from clinical experience. He is dealing essentially with results modified by conditions he may know nothing of, and arising from causes equally obscure. It is no wonder, therefore, that the history of medicine has had a varying system of pathology, a science of disease based upon the speculations of some prominent clinician, which were transitory as they were ingenious, and permanent as they were intelligible to the average human mind.

The general pathology of the present day necessarily represents the sum of the special pathologies of the past, and the desire for generalization finds its expression, not only in the volume before us, but also in the almost simultaneous publication of a number of works of the same character. Striking evidence is thus offered of the accumulation of material, and the necessity for its classification.

In the early part of the present century, the influence of the Paris school was clearly manifested in the call for accurately observed facts, and the tendency of the first half of the present century has been almost wholly in this direction.

The facts observed and registered related to disease were pathological, yet their bearing was special, and not general. During the last thirty years, equal attention has been paid to accurate observation, but facts have rather been considered in their relation to others than as isolated events, and the association of cause and effect has risen to greater prominence.

The progress made in this direction has essentially been due to the luxuriant

growth of experimental pathology, a growth so rapid and fruitful as to demand for itself a high place among the medical sciences. Bedside observation may be considered a part of the field occupied by experimental pathology, but the methods of normal physiology have shown a far more productive soil, by permitting the utmost possible control of conditions. The pathological physiology of the present day has already won its recognition as a science, and its results form the most valued acquisition to the knowledge of disease.

The first part of Stricker's General and Experimental Pathology contains eleven lectures; the first three of which are devoted to a consideration of what disease is, its symptoms and causes, special attention being paid to the effect of heredity, age, race, sex, etc. A series of five lectures follows, occupying nearly one-half the volume, and contains an elaborate statement of the history of infection and contagion. Finally, the phenomena of respiration and circulation are considered.

Disease is regarded as representing the reaction between external agents and the organism; but as health may be represented by the same relation, the additional element of intensity becomes necessary. All processes taking place outside the organism may give rise to disease, if their action is sufficient in degree. These are the external causes of disease, without which the latter cannot exist. There is, therefore, no spontaneous disease, the use of the term referring merely to our ignorance of the external causes.

But even with equally intense external agencies, the effect is notably different; and, in explanation of this fact, the familiar term disposition is still retained. All processes within the organism are influenced from without, and, during the normal course of vital processes, it is impossible for disease to take place, provided the disposition or temperament is normal. That the latter is abnormal, in certain cases, becomes a necessary hypothesis, though every effort is made to give this a material basis.

As all causes of disease are considered as external, these are further divided into mechanical and chemical. The former are considered as ponderable and imponderable. The ponderable causes are the traumatic—those resulting from the evident motion of bodies. The imponderable causes result from the action of forces, whose motion is invisible, as light, heat, electricity, sound, etc.

The chemical causes of disease are likewise twofold in character, those producing a direct local destruction of tissues, as caustics, and those injuriously affecting the function of one or more organs, by virtue of their chemical action. The latter series is composed of poisons, which are inorganic, and organic, living organisms being included among the organic poisons. These organisms may act mechanically as well as chemically, and are considered as the most probable cause of the infective diseases. Even were no visible proof of the cause of these diseases to be obtained, it is considered as essential that they must result from the reception of a material into the body rather than arise from the action of imponderable forces. Otherwise the outbreak of the disease must immediately follow the exposure to the cause instead of taking place at varying intervals afterwards.

In the consideration of the theory of the infective diseases, which forms so large a part of this volume, attention is directed more particularly to pyæmia, the history of which serves to illustrate that of the general subject, and it is in this connection that the results of experimental pathology are first prominently presented.

The arrangement of the matter is such that spontaneous generation and inoculation, putrefaction and decomposition, the ground-water theory and soil-emanations, pyæmia and septicæmia, and all the other familiar terms are grouped together for purposes of strength or weakness, according as they offer facts of value, or represent wavering hypotheses.

The author is evidently in favour of the germ theory of disease, the *contagium vivum*, and offers the following as the principal arguments in favour of this theory: 1. The morbid appearances—numerous organisms being found in the diseased parts. Although it is not positive that the organisms are the cause of the disease, still the view is generally favoured that the microscopic organisms found in certain foci of disease are actually pathogenetic.

2. The results of inoculation; these compel the conclusion that the agent of disease is capable of reproduction. The organisms alone in the inoculated material are known to have been reproduced.

3. The presence of minute organisms in the kidney of animals, who have died with symptoms of general disturbance, after the inoculation of material containing organisms resembling those subsequently found.

4. The physical evidence of a suspension of the contagium rather than its solution, a morphological rather than a soluble agent, and probably of an organized character.

The general impression derived from reading the first part of Stricker's work is decidedly in its favour. It seems to be wisely planned, to contain the most important results of experimental and clinical study, at the same time showing everywhere an earnest and intelligent criticism, which is manifestly intended to be wholly free from partiality.

Its tendency is a desirable one, in that it exercises a constant check upon too devoted an adherence to speculation, while it encourages the formation of a hypothesis, as suggesting the opportunity for controlling or demolishing the errors occasioned by less exact statement.

As a series of lectures, it represents the sort of training in general pathology offered in Vienna at the present day. Although calling attention to the numerous gaps in exact knowledge, it endeavours to fill them, yet does so by exposing the weakness of the material, which is interpolated. Each reader is furnished with the data which permit him to classify his ideas, and, at the same time, has his attention called to the existence of problems, the subsequent proving of which may require important modifications of his classification.

R. H. F.

ART. XXXII.—*Illustrations of Clinical Surgery.* By JONATHAN HUTCHINSON, F.R.C.S. Folio, pp. 173–191. Philadelphia: Lindsay & Blakiston, 1877.

It is probably owing to exigencies connected with the preparation of stones, and the consequent difficulty of publishing each fasciculus at the most desirable time, that the subjects of Mr. Hutchinson's portraits are not grouped in the manner best adapted for study. Some time since we had two fasciculi dealing with injuries of the head, which possessed great interest, and now we have another upon the same subject; but meantime two other numbers have been interjected, which discussed widely different themes.

Plate XXVIII. comprises three figures, of which number one furnishes an illustration of "scratch fracture," in which, despite the apparently trivial character of the bone injury, death from pyæmia resulted on the fourteenth day. Such a result hospital surgeons, familiar with the insidious advance of disease in the diploe, will not be surprised at. This illustration is furnished by the same case, which in a former part afforded a picture of inflamed dura mater with a thrombus in the longitudinal sinus, and when this picture is studied in connection

with that, we have a valuable history of such cases. Figure 2 shows a vertical fracture so extensive, and the anterior third of the calvarium was so nearly completely separated from the remainder that some crepitus could be developed. The cerebral injuries in this case were extensive, and death resulted in four days. Figure 3 depicts the result of a bullet-wound produced post-mortem. Owing to the fact that much greater resistance to the effects of violence is shown by the human skull after death, such experiments, once so common, possess little or no value, while unhappily the perpetual waging of war in one part or another of Christendom, affords so many specimens of injuries inflicted by bullets upon the living skull, that we confess to some surprise that Mr. Hutchinson should depend upon the results of a more than doubtful experiment to establish his point.

Figures 1 and 2, in Plate XXIX., represent the post-mortem appearances in a case where extensive fissures of the base of the cranium and confusion of various parts of the brain substance coexisted with an undetected depressed fracture of the vault. Death followed in four days, arachnitis having been developed. Although the brain injuries were probably too severe to admit of recovery, even had elevation of the depressed bone been accomplished, yet Mr. Hutchinson thinks, had the attempt been successfully made, the prospects of the patient would have been much better. In support of this opinion, he narrates a case which quite recently came under his hands, where the symptoms were as nearly as possible identical, in which he removed some fragments, and elevated the rest with a successful issue. Figure 3 represents a fissure of the orbit of ordinary type. Figure 4 is taken from a case of fracture of the base of the skull produced by the forcing upwards of the condyle of the lower jaw. The subject of this accident was a boy whose head was run over by a cab, and the force of the collision was so applied that the condyle of the lower jaw punched out a piece of the skull lying immediately over it, the size of a finger-nail. The necropsy did not extend beyond the head, and death, which ensued upon the fourth day, may possibly have resulted from trunkal injuries, as those sustained by the cranial contents appeared quite trivial.

Plate XXX. is occupied with three illustrations of fractures, which were principally noticeable from their extent.

The three figures which are included in Plate XXXI. are of great interest. One of them shows a post-mortem result, while the other two are portraits of the conditions which were supposed to exist, but which could not be verified, on account of the recovery of the patients. In all three cases the trephine was used, and it is this fact which at once arrests the attention of the practical surgeon. The extreme and well-nigh heroic practice of Percival Pott and John Bell, great surgeons though they were, has been followed by the adoption on the part of many surgeons of an opposite line of practice equally extreme. By some authorities, now exercising a wide influence, we are cautioned against any interference with depressed bone by means of the trephine, or, at least, its use in such cases, if not interdicted, is looked upon with very grave suspicion. So far has this doctrine been held of late years, that we have known an excellent surgeon to decline the use of the trephine in a case of punctured fracture, and allow the patient to die with the spiculae, which invariably attend such cases, still projecting into the substance of the brain, the direct exciting cause of the fatal abscess. We are told that we may venture to elevate portions of depressed bone if we can get the point of an elevator to take hold, or we may even go so far as to remove an obstructing piece of bone with Hey's saw; but there we must hold our hands. The writer of this notice has always held an opposite opinion. While compound depressed fractures of the skull are always very serious injuries, and will ever be apt to be followed by fatal consequences in a large percentage of cases, whether

trephining is resorted to or not, we have never been able to divest ourselves of the opinion that this operation, like many others, finds its principal danger in delay, that like herniotomy and tracheotomy, it is not so often the operation that kills, as the diseased condition which is allowed to go on unrelieved. When, as the result of trephining and elevation of bone, a cerebral abscess is discharged, there may be a very strong feeling in the mind of the operator that the condition of the patient is desperate; but at the same time it is difficult to resist the opinion that, had the same operative measures been resorted to earlier, his prospects would have been much better. The plates in this number are uncoloured, and therefore less striking to the eye, but the instruction to be derived from them is not less than in the case of the other fasciculi.

S. A.

ART. XXXIII.—*Landmarks, Medical and Surgical.* By LUTHER HOLDEN, F.R.C.S., Vice-President and Member of the Court of Examiners of the Royal College of Surgeons of England; Surgeon to St. Bartholomew's and the Foundling Hospital. From the Second English edition. 12 mo. pp. 128. Philadelphia: Henry C. Lea, 1878.

THE little book before us, dedicated to the "students past and present of St. Bartholomew's Hospital," is an American reprint of a republication, with additions, of a paper which originally appeared in *St. Bartholomew's Hospital Reports*. It is precisely what its name imports, a gathering together and digest, as it were, of those anatomical landmarks, which are of such value as guides, not only to the practical surgeon, but also to the physician in his daily work. By the term "landmarks," the author means the "lines, eminences, and depressions which are guides to an indication of deep-seated parts."

It is not our purpose here to follow closely the anatomical details which are so ably presented by Mr. Holden. We can only refer our readers to the book itself. It is essentially a work of reference, in which the busy practitioner can find at a glance, the data so often desired at a moment's notice, and which cannot always be found in the treatises on anatomy without considerable research.

The arrangement of the Landmarks is according to regions. The first considered are those of the head and face, including the mouth, nose, throat, and features. The neck is then taken up, and this chapter will be found of great value, bearing, as it does, upon the operations of tracheotomy and the ligatures of the great vessels, and on the precise position of the apex of the lung.

The study of the chest region comes next, and rules for counting the ribs and for finding the outline of the heart and lungs are given. In the chapter on the back we are presented with a tabular plan of the parts opposite the spines of the vertebrae, and rules are laid down for fixing the origin of the spinal nerves.

In the pages devoted to the abdomen, the abdominal lines, the umbilicus, the parts behind the linea alba, the peritoneum, the significance of the various bony prominences, the abdominal rings, and the precise location and detection of the viscera are fully considered. To the general practitioner this matter will be found of the greatest interest.

Mr. Holden on the succeeding pages examines the landmarks of the perineum and rectum, and sums up the external anatomy of the lower extremity, including the buttocks; and of the upper extremity, including the shoulder and axilla. The final pages of the book are devoted to the subject of palpation by the rectum and of examination per vaginam.

From this sketch of the contents of the book it will be seen that the object of the author has been to present, in condensed form, those external landmarks, a knowledge of which is so often desired especially when the memory is a little at fault. We think he has most happily succeeded in his design, and that he has in this unpretending little volume furnished, not only students of anatomy, but the profession in general, with a manual of ready reference, which may prove of far more value than many a treatise of greater pretensions. Its pages are full of practical medical and surgical hints, and we are quite sure that Mr. Holden's solid reputation as a skilful anatomist and learned writer will be still more enhanced by its publication.

J. H. B.

ART. XXXIV.—*Transactions of State Medical Societies.*

1. *Transactions of the Texas State Medical Association*, April, 1877, pp. 242. Marshall, Texas, 1877.
2. *Transactions of the Medical Association of the State of Alabama*, April, 1877, pp. 190. Montgomery, Ala., 1877.
3. *Transactions of the Medical Society of New Jersey*, May, 1877, pp. 270. Newark, N. J., 1877.
4. *Transactions of the Medical Association of Georgia*, April, 1877, pp. 198. Atlanta, Ga., 1877.
5. *Transactions of the Minnesota State Medical Society*, June, 1877, pp. 180. St. Paul, Minn., 1877.
6. *Transactions of the Kentucky State Medical Society*, April, 1877, pp. 216. Louisville, Ky., 1877.
7. *Transactions of the New Hampshire Medical Society*, June, 1877, pp. 119. Concord, N. H., 1877.
8. *Transactions of the Medical Society of North Carolina*, May, 1877, pp. 88. Salem, N. C., 1877.
9. *Transactions of the Medical Society of the State of Pennsylvania*, June, 1877, 8vo., pp. 310. Philadelphia, 1877.
10. *Transactions of the Indiana State Medical Society*, May, 1877, pp. 169. Indianapolis, Ind., 1877.
11. *Transactions of the Kansas Medical Society*, May, 1877, pp. 79. Lawrence, Kansas, 1877.

1. In the *Transactions of the Texas Society* we find an interesting paper by Dr. CAROTHERS on the causation of *Calculous Disease*. He attributes the formation of vesical calculi to local rather than diathetic causes. A catarrhal inflammation of the lining membrane of the pelvis of a kidney, if of a somewhat low and chronic type, gives rise to secretion of a viscid mucus. In the presence of this substance the uric acid, normally in solution, crystallizes, forming with the mucus a semi-solid mass. Once begun, growth is easily understood. When driven from the kidney into the bladder, the nucleus acts like any other foreign body. The difference of the vesical mucus from that of the pelvis is believed to be the cause of the phosphates supplying, in whole or in part, the place of uric acid in its later growth. That the stone may originate in the bladder, by processes similar to those described as occurring in the kidney, is not very distinctly stated, though apparently implied. The arguments against diathetic and dietetic causes, here brought, are strong as to the beginning of calculi, but not equally so, it seems to us, as to their subsequent growth.

From an instructive report upon *Ophthalmology*, by Dr. MANNING, we learn

that conjunctivitis is extremely common, and blepharitis marginalis not rare, in Texas. The "fine dust" from the prairies, and the high winds, often of rapidly changing temperature, are named as the probable causes.

In a paper upon *Myocarditis*, Dr. GOLDMANN makes some interesting suggestions. Absence of the first sound, for a few beats, its reappearance in a muffled tone, again to disappear, together with an almost imperceptible pulse, are the physical signs thought to be especially characteristic. That attenuation of the cardiac walls sometimes attains to such an almost incredible degree without rupture, or previous to it, the writer believes to be due to the elastic pressure and support afforded by the lungs.

2. To the *Alabama Transactions* Dr. JEROME COCHRANE contributed a paper on the *Causation of Yellow Fever*. He believes in a specific poison conveyed by organic germs, which last are capable of development within the human body, and possibly without it, under certain conditions.

A curious case of *Injury by the Electric Stroke* is here reported. Although the fluid first touched over the spine of the scapula, causing superficial sloughs, it was not till it reached the lower part of the leg that very serious harm was done. Here the sloughing was so extensive and so deep that the loss of the leg was anticipated. On separation of the sloughs, the lower part of the fibula seemed to have lost its vitality. By the fortieth day the inflammation and suppuration had extended to the knee, or higher, and amputation was done at the middle third of the thigh.

3. In the *New Jersey Transactions* we find a contribution to our knowledge of that affection often known as *Hay Fever* or Autumnal Catarrh. Its author, Dr. MARSH, is himself a victim of the disease. The pollen of certain plants, especially that of the "ragweed," he believes to be undoubtedly the exciting cause. Experiments of his own confirm those made by BLACKLEY and WYMAN as to the general diffusion of pollens, especially of the ragweed, at the time the disease prevails, and also as to the effect produced on susceptible subjects when a few grains are placed within the air-passages.

Fatal obstruction of the bowels, in an elderly man, was found after death to be due to the presence of an olive-shaped concretion, seven inches above the ileo-cæcal valve. On careful examination, no nucleus, and no definite structure, could be detected. Vegetable fibre alone could be identified.

A fatal case of greatly *enlarged spleen*, in a lad of thirteen, is very imperfectly reported. A most extraordinary feature in the case seems to have been the enormous amount of blood thrown off by the stomach, at periods, weeks or months apart. On one of these occasions, three attacks of vomiting occurred within six hours, to the estimated extent of three quarts in all. Yet he would soon rally from such seizures, and resume attendance at school. Just before the fatal attack, he had seemed decidedly improving, with diminution of the tumour, under the use of ergot injected over the spleen.

A case of *sanguineous cyst*, originating in the sacrum and ultimately filling the whole pelvis, is described by Dr. W. PIERSON, JR. Great interference with the functions of the rectum and bladder, frightful suffering, and possibly the large amount of chloroform used, caused death four years after the accident which began the trouble. The patient, a heavy man, had sat down violently on the floor.

When we read a report by Dr. SOUTHARD, upon the *Water-supply of Newark*, we can only wonder that its mortality is not higher than 30 per thousand. More than half its people drink well-water. There are estimated to be 15,000 cesspools and privies. As a rule, one of these and a well occupy each back-

yard, in the sections unsupplied with aqueduct water. Analysis fully confirms the fears excited by this proximity, and by the character of the soil and surface. As if the cesspool filtration was not bad enough, the laying of sewers (with dry joints) in many streets was found to lower the water in adjacent wells; and of course when the latter are low the current is liable to be reversed. A public pump, at a street corner, yields water dangerously loaded with sewage. And people who have aqueduct water in the house, send for this pump-poison because they like it better. The former is by no means pure, but relatively far better.

Menstruation, beginning at fourteen, and still continuing regularly at seventy-three years, is reported by Dr. JAMES CRAIG. Health was always good, and the function continued during three pregnancies and periods of lactation. And on the other extreme, he describes a case in which, from a mother's report, the catamenia appeared at four years of age, continuing till ten, and then ceasing till fourteen, when they became, and continued, regular.

Dr. RYERSON reports an instance of a child, four years and seven months old, who lived four weeks with over an inch of No. 1 sewing needle in the heart. At the autopsy, it was found to have passed partially through the cartilage of the fourth rib, into the wall of the right ventricle. Pus welled up through the perforated cartilage, and loose, in an abscess holding one or more ounces of pus, in the muscular substance, lay the needle. It was supposed that, until loosened by suppuration, the broken end remained fixed in the rib, thus pinning the heart to the chest-wall. An attempt during life to discover and remove the needle had failed.

A *cystic tumour*, the size of a small egg, and occupying the cavity of the right ventricle of the heart, is reported by Dr. JAMES. The sac was broken, apparently before death. What appeared to be pus, with dark, clotted blood, oozed from it. Heart, much enlarged, was filled with coagulated and dark-coloured blood, as also were the aorta and other great vessels. The lungs were "almost hepaticized," and contained small particles of purulent matter, apparently derived from the cyst.

4. In the *Transactions of the Georgia Society* the formal addresses are unusually good.

Dr. A. W. CALHOUN reports the successful treatment of *sympblepharon* by dividing the adhesions with a scalpel, and fixing by sutures a portion of a rabbit's conjunctiva in the position held by the normal membrane in health. Only one adhesion, near the inner canthus, marred the success. The rabbit's eye, strangely enough, healed without any adhesion of the raw surfaces of lid and ball.

The use of chloroform as an anæsthetic in surgical cases seems to be quite general in Georgia. We notice in one instance of its use, the patient was held up by the heels three times, in consequence of as many stoppages of the heart.

To assist the *evacuation of matter from carbuncles*, Dr. LEITNER recommends the use of cups, applied over and surrounding the diseased spot, just as they would be over a scarified surface to promote bleeding. For felons or small boils, the same principle may be applied by using the barrel of a glass syringe, to be exhausted by suction from the lungs. He has found these methods of very great use in relieving pain, and hastening a cure.

Dr. HUNTER believes that *fibrous tumours of the uterus* are much diminished, if not cured, by muriate of ammonia. Two cases are given.

5. In the *Minnesota Transactions* we find an attempt, by Dr. J. C. ROSSER, to trace the effect of meteorological causes upon the attacks, or exacerbations and remissions, of *neuralgia*. We do not find the diagrams here given at all clear. If we understand the text aright, intercostal neuralgia got worse with a rising

barometer. "Cervico-brachial and sciatic neuralgia follow high ranges of humidity and high barometric pressure, developing immediately after and in the rear of storms." Neuralgia of the trigeminus, he says, differs from the above forms, "and seemingly relates more closely" to rising temperature and moisture, with low pressure. The connection between facial neuralgia and malarial poison is, he thinks, supported by these facts.

Dr. J. H. MURPHY removed a *vesical calculus*, nearly two inches long by six lines in thickness, which had for nucleus a minie rifle-ball, received into the bladder eight years before, while serving in the war of the rebellion.

Dr. L. P. DODGE reports a case of *double uterus and vagina*, in a woman of twenty-five years. The left vagina was the larger. Septum complete. Two cervices, each with its os, were well developed. There were two uterine cavities, with septum as in vagina. Menstruation was from both divisions, and was habitually painful and irregular. Patient was childless after six years' marriage, and sought advice on account of painful and difficult coition.

We find here a curious case of *arrested fetal development*. A tumour, weighing six pounds, and supposed to be one of the ordinary fatty variety, removed from the lower border of the thorax of a healthy, middle-aged woman, was found to contain a central cavity, with lining membrane, and some remains of a fetal skeleton. The tumour was reported to have been congenital; to have begun to increase in size twenty years ago; and to have been for "some time" discharging pus and portions of bone through an ulcerated opening.

6. In the present issue of the *Kentucky Society*, Dr. W. T. OWEN combats the views of Dr. Ely McClellan concerning *cholera*. He believes the presence of malaria to be necessary to the appearance of cholera. It is not that malaria, or the conjunction of vegetable decay, moisture, and heat, is the sole cause, but only the condition without which the disease never occurs. The writer, also, warmly disputes the portability of cholera.

Here, as in several other of these publications, we find testimony to the exceeding virtue of *salicylic acid in acute rheumatism*. Dr. Yandell, Jr., gives ten to thirty grain doses, rubbed to a paste with a teaspoonful of cream, and then stirred into four ounces of milk or cream.

In an article on *occipito-posterior positions*, Dr. LOGAN contradicts the somewhat prevalent impression that negro women get through child-birth and its results more easily than whites. He has not found, either, any marked difference in the shape of the fetal head in the two races.

Dr. D. S. REYNOLDS advocates *iridectomy* as an almost certain cure for *iridocyclitis*, appearing as a syphilitic symptom. Proper constitutional treatment is, of course, also necessary.

7. To the reader of the *New Hampshire Transactions*, the chief attraction will be found in two admirable addresses, respectively by Dr. A. B. CROSBY and Dr. A. H. CROSBY. Both are overflowing with wit and wisdom, but are utterly insusceptible of analysis. The subjects are, *The Ethical Relations of Physician and Patient*; and *Orthodoxy and Heterodoxy in Medicine*.

Dr. S. J. ALLEN describes what he claims as a *new, easy, and unfailing method of reducing luxations of the hip-joint*. Standing astride the patient, he lifts the affected limb, placing his hand in the popliteal space and bringing the foot between his legs and against his perineum. The thigh being thus flexed at right angles to the body, and the knee also bent, the surgeon lifts vigorously till he raises the hips off the bed. This, of course, turns the patient from his back over upon one side; and after holding him thus suspended for a few seconds, the head slips back

into the acetabulum. The patient is supposed to be fully under the influence of anesthetics. The four illustrative cases are all of dislocation upon the dorsum; but the writer claims that the other and rarer displacements all pass into the former before reduction is accomplished.

Dr. J. W. PARSONS reports the death, apparently from intercurrent acute tuberculosis, of the patient whose *extraordinary tolerance of empyema, pneumothorax, and aspiration*, were described in the *Transactions* for 1876. From March 17, 1876, to March 24, 1877, aspiration was done ninety-three times. At the end of that time, a curved cannula was inserted between the eighth and ninth ribs and kept there. During the summer and fall he did what he called light work, and said he "often did a man's work"—and the lightest labour of a New Hampshire farmer is no trifle. He was loading his wagon with sea-weed, at the shore, when he caught the cold in November, which seemed to lead to his death. This finally occurred from pulmonary hemorrhage, May 26. The left pleural sac had a capacity of fully two pints, with walls thickened and rough. The lung, compressed against the spine, about six inches by four, and one inch thick, was firmly bound down, presented no trace of air-cells, but showed points of communication between the bronchi and the sac. The right lung had its interior thoroughly honey-combed with cavities, and what lung-tissue remained was sown with tubercle in all stages. This disease was believed to be of recent origin. That upon the left side dated about five years back.

8. To some of our readers, sensitive to the reproach brought upon our city and profession by bogus "colleges," it may be some consolation to learn from the *North Carolina* pamphlet that a duly incorporated medical college there exists, having but one "professor" or teacher, assisted by his son as "demonstrator," who has never seen another college. This admirable institution has for ten years turned out annual graduates, armed with the all-sufficient parchments.

Dr. WOOD regards it very important in the *treatment of tapeworm* that the parasite, when passing from the body, be received in warm water. Otherwise the extruded portion loses vitality, and is more apt to break and leave the head inside, whereas, if kept alive and whole, the weight of the part expelled soon brings down the rest.

Dr. GRISSOM contributes an excellent paper on *epilepsy*. Many facts and relations, but little known to many physicians, are here clearly brought out.

Dr. LANE describes a case of *retroversion of the bladder*, with non-union of the pubes, and non-development of the genital organs, in a little girl two years old.

In a paper on *hypodermic medication*, Dr. FOOTE expresses a belief that ammonia thus given may prove curative in hydrophobia. He loosely states that a medical friend bitten by a rabid dog, whose bite gave fatal rabies to four goats and one hog, and who himself "suffered from the constitutional effects of the poison to an alarming extent," recovered under thirty-drop doses of strong ammonia frequently repeated.

9. The solid volume of the *Pennsylvania Transactions* necessarily contains much interesting matter at which we cannot even glance.

Dr. LEXOX HODGE'S *Address in Surgery* contains two very instructive cases of reflex epilepsy, both cured by the removal of cicatrices. In each instance the wound was about the head. Excisions of the spleen, kidney, lower end of rectum; subcutaneous osteotomy; and abdominal section for the relief of intussusception, for removal of foreign bodies from the stomach, and for extra-uterine pregnancy, are among the topics noted as indicating recent advances. The so-called antiseptic method as applied to wounds and operations is highly estimated.

Dr. CURWEN'S *Address in Mental Disorders* is very well adapted to convey to the general practitioner a knowledge of insanity, which would seem to be much needed.

The invariable diagnostic importance always to be attached to a persistent muscular contraction, is the chief lesson drawn by Dr. Benj. Lee from a case of psoas abscess. Such contraction, however slight in degree, should never be lightly valued. It points generally to grave disease in joints, nerve trunks or centres, or in parts so close to these last as to cause irritation if not organic lesion.

Dr. Allis directs attention to a fracture of the ulna in its upper third, accompanied by forward dislocation of the head of the radius. He explains, by the aid of simple diagrams, that, in the position of the limb and with the direction of violence by the conjunction of which only this particular fracture would seem likely to occur, the displacement forward of the radius would naturally follow. Flexion of forearm upon arm at right angles, with the breaking force acting at or near the site of fracture, and in the direction parallel to the humerus (and at right angles with forearm), are the conditions here assumed as determining the special traits of this injury. The shock that breaks the ulna forces the head of the radius from its articulation forward, and, as to the humerus, upward. In cases where the dislocation has not been remedied, no very serious limitation of motion results, beyond inability to flex the joint much beyond the right angle.

Dr. W. R. Hamilton, of Pittsburgh, describes a modification of Syme's amputation, whereby greater ease and rapidity are attained, with freedom of the heel-flap from straining, bruising, or laceration. His improvement seems to consist in deferring the troublesome dissection of the flap until he has made the dorsal incision and opened the joint. He can thus perform the separation of integument from the os calcis, from the front and from above, downward and backward, if we understand rightly. In addition to the advantages just mentioned, it is claimed that the dissection can be carried closer to the bone, even taking off some fibres of periosteum, and wholly avoiding injurious hemorrhage. Less danger of sloughing is claimed also; and it is said that the plantar incision can be made further forward than in the old procedure.

Dr. John H. Packard reports excellent results from the use of elastic ligatures in laying open, and thereby curing, urethral fistulae. Perineal section being done upon a staff, the ligature was passed through each fistula and through the wound. A moderate tension, renewed every two or three days, brought the ligatures rapidly and pleasantly to the surface, union closely following up the ligatures, as they passed through the tissues.

Passing to reports of county societies, we notice in the mortality returns of Allegheny County a great diminution in the deaths from "cerebro-spinal fever." For four successive years, 1873 to 1876, the figures are 103, 18, 20, and 2. No comment is made upon the change.

The prevalence of smallpox in Reading, coming so soon after the terrible lessons of 1871-2, is not only sad, but absolutely disgraceful to the community that could permit it. Of cases there were 848, and of deaths 186, in eleven months, beginning June 1, 1876. Over five hundred of the sick reported that they had never been vaccinated, or that the operation had failed. Other zymotic diseases furnish a pretty large mortality. Neglect of vaccination; crowded population in filthy, low, and ill-drained streets; cesspools, shallow and untended; and possibly the underlying stratum of clay in the worst neighbourhoods, are noted as the principal apparent unwholesome circumstances.

In Delaware County a man came home, sick with typhoid. Five members of his family were successively attacked, although the neighbourhood had been and continued free from the disease. The house was wretched in respect to light and

air. Another outbreak of this fever occurred in a space of some two miles in length along the Darby Creek. Thirty cases in some twenty families were noted, and "every one of these persons had used milk from the farm to which the first case had been brought." The later words quoted lead us to infer a connection between the *five* cases and the *thirty* cases; but the report is not definite, and no date is given for the first group. The account goes on to state that "the clothing of this family" [where the five cases happened?] "had been washed at the spring-house where the milk was kept, and probably the same boiler used that was used in washing milk-pans and cans. The sale of milk was stopped, and in two weeks new cases ceased."

Severe epidemics, or endemics, of diphtheria are noted by several reporters. From Lehigh County, especially from Allentown, we hear of an outbreak, simultaneously in different parts of this city, after a period of unusual healthfulness. The cases were very severe, and the contagion very marked. The attack was very sudden, with high fever, temperature four or five degrees above the normal standard, vivid redness of pharyngeal surfaces, with swelling speedily followed by exudations. The majority of deaths were due to blood-poisoning; others to exudation. The membrane often extended to the posterior nares, Eustachian tube, and the middle ear. Muscular paralysis, after recovery from exudative processes, developed gradually from the muscles of the affected locality to the neck and the extremities. Irregular and intermittent heart action was not infrequent. Epistaxis, fatal sometimes, was quite common, but no statistics of cases are given. Of some 360 deaths from all causes, 64 are attributed to diphtheria.

An extremely interesting paper on the meteorology and epidemics of 1876 forms a portion of the Philadelphia County Report. The heat of July is spoken of as wholly unprecedented for degree and for continuity. Europe suffered almost as much as America. An extraordinary development of parasitic insects, fleas, and other domestic pests, weevils and worms, etc., was noticed as an attending circumstance. A complete absence of solar spots was remarked, between March 25 and June 22. In Philadelphia, the death-rate, based upon careful estimates of population, was slightly less for the whole year than the *average*. For the month of May, it was somewhat above; which the committee incline to attribute to the crowding, excitement, and over-exertion attendant on the opening of the exhibition. In June the rate fell off considerably, in spite of two hundred deaths from cholera infantum. The terrible and never-to-be-forgotten July, witnessed 600 deaths from the cause just named, and 127 from sun-stroke. If these be deducted from the total, the mortality will be less than obtained in March, with its 800 victims to pulmonary complaints. The total mortality of 18,892 was 1087 greater than in 1875. Of this excess more than half was among infants and the very aged; and phthisis killed 317 more persons than in 1875. The remaining excess is so slight as scarcely to need accounting for by the increase of population, and by the exhibition.

Among the fluctuations of mortality from special causes, the increase of typhoid attracts attention. The 761 deaths exceeded those of any year since 1865. The number in 1875, too, had been unusually low, 419. This excess of typhoid, the committee are disposed to attribute to the joint action of drought and extreme heat. Impurities in the water are thus less diluted, and surfaces usually covered with water are left exposed to the sun. A very much greater increase of typhoid mortality is thus explained for the city of Paris, in the same year, by Dr. Bourdon, of "La Charité." The unusual number of steamers, stirring up the shallow waters of the Schuylkill, is also mentioned as a probable factor in our own case.

The "centennial sickness," so called, is believed by the committee to have been not one definite malady, but many forms of disturbance. Diarrhea, debility,

typhoid, and typho-malarial are here named. In addition to the many and obvious causes of disease attendant on the occupation and mode of life of our visitors, crowd-poisoning is suggested as an extremely probable producer of disease. To one who has pressed through the sweltering masses in the Memorial Hall on a special "day," this hypothesis presents no difficulties. Imperfect drainage of the immediate site is also adverted to. We remember noticing that the floor of Machinery Hall was laid directly upon a wet, quaking, and elastic clay.

The fact, apparently wholly ignored by some alarmists and critics, that a certain proportion of our visitors were absolutely sure to die within a certain time, is well brought out. Allowing only for a death-rate less than obtains among the New York police—picked men in the prime of life—it is carefully estimated that up to Dec. 11, 6000 deaths should naturally occur among the returned visitors to the exhibition, independently of special causes therewith connected.

A smallpox mortality for this city, of 497, while not so outrageous as that of Reading, is yet all wrong, and should excite the earnest attention of the Board of Health.

In the Schuylkill County Report, we find a notice of a boy of fourteen becoming impaled upon the end of a carriage thill or shaft. Boy and vehicle were moving rapidly in opposite directions. The smooth worn point of the shaft entered one inch below the left nipple, and came out behind, the precise point not being stated. Swing three times into the air by the rearing of the horse, he then pushed himself off the shaft, and walked home with some assistance. No cough nor hemoptysis followed, and apparently little shock. Effusion into the pleura occurred, with free discharge of pus from both wounds. This gradually lessened, and finally both wounds closed, the anterior last, and the boy was in robust health. Dates are not given, nor are many details which we should like to know.

Dr. John T. Carpenter treated an elbow, which was completely shattered by a heavy load of shot from a gun in the patient's own hands. A more complete destruction of the parts could hardly be imagined, except that the arteries escaped. The lower two inches of the shaft of the humerus, with its condyles, were sawed off, and the head and upper end of the radius with a large splinter of the ulna were removed. Irrigation with carbolized water was employed, and healthy granulations gradually filled the wound. Passive motion was then used, and a serviceable false joint, with good range and strength, was obtained. The shortening was four inches.

10. In an Address upon Empiricism, President Boyd of the *Indiana Society*, hits several nails hard and square on the head. Legislation can do little, even if obtainable, until the average of public intelligence and appreciation is elevated. And no quackery is so harmful to the profession as that practised by members of the regular ranks. The orator's exposure of the weaknesses of both physicians and patients is peculiarly rare and vigorous.

Dr. Hervey suggests, with some judgment, steps that can be taken by the profession to secure such enlightenment of the people as may lead them to tolerate, and even to demand, legislation for sanitary ends. Investigations of sanitary questions made by committees of the Society, reports of results, annually presented to the Governor, and printed in a popular form for sale to the public at low prices, together with teaching the rudimentary principles of public health in the schools, are some of the means recommended.

Dr. Haughton examines at some length the nervous mechanism concerned in vascular contraction and dilatation, and indicates the probable mode of action of the drugs used to influence the distribution of blood.

Dr. J. L. Rooker attacks with judicious vigour the indiscriminate use of the

hypodermic syringe. No more than ourselves does he deny the very great value of this form of medication, in special cases. In these it is certainly invaluable, and cannot be replaced by any other mode of administration. Apart from the many and grave objections to its unnecessary use by physicians only, the writer notices the very curious but undeniable fact, that this apparently harsh method possesses peculiar fascinations for invalids, and is constantly employed by them at their own discretion. We have met two cases in which we sought in vain to induce devotees to morphia injections to try to use the drug in the ordinary manner, as a first step towards cure. One of them we convinced by experiment that the stomach would duly absorb it. The other did not allege any inability on the part of the stomach. Neither could give any definite reason for adhering to the syringe; and neither would abandon it. One employed it till the physical strength became inadequate to the act, when death speedily occurred. We think the time has fully come when all conscientious physicians should frown upon the habitual and needless use of hypodermic medication.

11. In the *Kansas Transactions*, Dr. Schenck combats the "germ theory" of septic diseases. The organisms to which these diseases are attributed do not always precede the symptoms, as they should, if causative, but on the contrary appear only after the disorder is fully developed. Infectious fluids have been found to retain their virulence after bacteria have been removed; and bacteria, separated from the fluid, have been found innocuous. Living germs or organisms are also sometimes existent in the blood when the disease is not infectious. That many remedies which kill germs do also cure septic disease does not prove the assumed relation of cause and effect. In truth, antiseptic efficacy and destructiveness of germ life do not closely correspond, in different drugs. The fearfully powerful virus of the rattlesnake, as shown by Dr. Weir Mitchell, contains, when fresh, no visible organic life, and the flesh inoculated with it rapidly putrefies. Chemical changes seem, to our writer, better to account for the production of the different specific poisons than does the theory of germs.

In a report upon typho-malarial fever, Dr. Van Eman seems rather disposed to doubt the specific entity of typhoid proper.

Dr. Sinks reports a case of congenital tetanus. The infant died twenty-four hours after birth. It was born by a face-presentation, but not with a particularly long or difficult labour. Rather violent movements had been felt a few hours before labour. Death was apparently due to interference with respiration.

Multiple tumours of the dura-mater accompanied with absorption of entire thickness of the cranium over them, abscess of the brain and hemiplegia, are reported by Dr. H. S. Roberts. There was a strong tendency to wasting away of bony tissue in other parts of the skeleton. The precise relationship between these different phenomena is not altogether clear, and makes the case one of great interest. The tumours, from one-eighth to four-eighths of an inch thick, were all upon the left parietal region, except one over the right orbit. No sign of brain irritation appeared connected with these. One only had produced slight depression. The left hemiplegia was attributed to the abscess, deep in the right hemisphere. The tumours, six in number, are described as "fungous," "strawberry-red" and "quite vascular."

B. L. R.

ART. XXXV.—*Transactions of the Canada Medical Association.* Tenth Annual Meeting, Montreal, Sept. 12 and 13, 1877. Vol. 1. Publication Committee: Drs. David, E. Robillard, R. P. Howard, F. W. Campbell, and Wm. Osler. 8vo. pp. 244. Montreal, 1877.

In addition to the minutes of the annual meeting, list of officers and members, and the president's address, this volume contains fifteen papers, generally short, but on subjects of present interest to the profession, and of more than ordinary merit.

The subject of the forensic relations of insanity, with special reference to the Pimlico murder, is treated by Dr. Joseph Workman in a paper "On Crime and Insanity," in which the details of several similar Canadian cases are given. This is supplemented by one entitled the "Plea of Insanity in Courts of Law," by Edward Hornibrooke, M.D., written to favour the principle of placing those charged with crime, and in whose defence the plea of insanity is urged, under the supervision of experts for sufficient time to enable them to determine whether the culprit was insane or not at the time the crime was committed. This is a protest against the prevailing practice in courts of law of requiring ordinary practitioners to give expert testimony in cases of insanity, and of practically demanding that juries shall decide as to the sanity or insanity of the culprit.

Dr. R. P. Howard contributes two cases of "Stenosis of the Tricuspid Orifice," with observations. In one of these the right auricle was dilated to such an extent that it was large enough to contain a good-sized orange; the cusps, by their fusion, had formed an elliptical opening at the tricuspid orifice, but the mitral and aortic valves were also diseased.

In a paper, by Dr. Geo. Ross, a typical case of Addison's disease is given, with a careful report of the autopsy, by Dr. Osler. The suprarenal capsules were found to be enlarged and the seat of extensive caseous deposit, with some softening. This patient had none of the ordinary rational signs of anæmia, and microscopic examination of the blood "proved that its cellular elements appeared just as in health." The entirely negative results of this typical case, as regards the condition of the blood, are referred to as wholly opposed to the theory of Prof. Pepper expressed in his paper published recently in this Journal. A case of Progressive Pernicious Anæmia of the Myelogenous Variety, with an autopsy, is contributed by Drs. Bell and Osler.

A case of Supposed Gummy Tumour of the Brain in a child of three years, followed by recovery—and papers on the Use of Acetate of Lead in Large Doses in Post-partum and other Hemorrhages, and on Vital Statistics—complete the medical articles.

In the surgical section, we notice papers on Various Wounds and their Treatment; on Ovariectomy; Vesico-Vaginal Fistula; Embolism of the Arteria Centralis Retinae; on the Origin and Development of the Epithelial Tumours of the Anterior Third of the Eyeball, with some general remarks; Optical Defects; and, finally, an illustrated article, by Dr. Fenwick, on Excision of the Knee-joint, embodying the results of thirteen operations, and only one death, although two cases of chronic diseases subsequently required amputation.

We regret that want of space forbids a more extended notice of some of these papers, which are models of conciseness; but if we were to single out any feature for especial commendation, it would be the reports of post-mortem examinations, which have been carefully conducted, and clearly and comprehensively recorded. We would, also, have liked to refer pointedly to some of the paragraphs in the able address by the President, Wm. H. Hingston, M.D.; but space permits us

only to refer to that part of it which treats of feticide in its social, moral, and legal relations. The alarming prevalence of this crime in the United States is commented upon, and is declared to be "but the logical outcome of those theories of genesis and of population which have been so enticingly placed before us by some very eminent scientists in latter years."

After reporting a case of a lady, "who came from the adjoining Union, with shattered health and with head bowed down, who admitted, unreservedly, having procured abortion in her own person fourteen times!," he permits his opinion of the relation of the materialistic tendencies of the science of to-day to be inferred from the following:—

"When persons have learned to regard man, in embryo, as a mere aggregation or union of fortuitous atoms, a plastic germ, a kind of colloid or protoplasm, which the chemical and mechanical laws of attraction and repulsion, selection and rejection, change and wave-like motion, may ultimately develop into a thinking being, but little heed will be given to the integrity of that immature creature suspended in the female womb. . . . If man derives his existence by a process of evolution from a simple cell way up through the tribes of zoöphytes, lizards, and monkeys, *cui malo*, then, now and again, to hook an embryotic mass from any part of that long living chain? The bathybius or beetle, the codfish or chicken, the mollusk or monkey, is but a link, and man is no more."

It is evident that the disciples of Malthus and of evolution have been detected in their nefarious work of undermining the foundations of society, and they are hereby warned to desist before they are overwhelmed by the rising storm of popular indignation, or the entire superstructure comes tumbling about their ears.

Perusal of this first volume of the *Transactions* of the Canada Medical Association confirms the high opinion expressed by Prof. Bowditch, in his presidential address to the American Medical Association last year, when he spoke of the former as "a body of physicians, all of whom have been educated under English influences, and many of whom have pursued their studies in England, and have received diplomas from the schools of that country," and "we all know the high standard of qualifications required by the British schools."

Feeling that these encomiums are not only sincere, but also sustained by evidence, we hasten to acknowledge this series as promising substantial gain to American medicine.

F. W.

ART. XXXVI.—*Transactions of the American Neurological Association for 1877.* Vol. II. Edited by E. C. SEGUIN, M. D. 8vo. pp. lxi., 227. New York, 1877.

THE papers read at the meeting of 1876 are included in this volume, as well as those of 1877, making twenty-two articles in all, on subjects of general interest to the profession.

In the Inaugural Address, Dr. Jewell lays down a proposition, the truth of which is becoming daily more and more appreciated. After calling attention to the need of a more thoughtful study of the healthy anatomy and physiology of the nervous system, and confessing that thus far comparatively little has been done and made public in our own country towards advancing a knowledge of this kind, he says, "with due respect to those who laboured in less favoured times, I wish to see less reliance placed on the records of pathological cases as they exist in the literature of the past." In other words, *post-mortem* results, as recorded by incompetent and inexperienced observers, serve to retard rather than to ad-

vance science. With our present improved methods of investigation and broad foundation of facts of normal anatomy and physiology, the progress of pathology demands that an individual who undertakes to conduct an autopsy shall employ these methods and be thoroughly familiar with normal anatomy, both macroscopical and microscopical. This is especially true in the pathology of the nervous system, so much so that an eminent physiologist lately expressed the opinion that in view of the conflicting facts that have been recorded, "the field must all be worked over, and we must now begin *de novo*."

In Dr. Hammond's paper on the Odour of the Human Body as developed by Certain Affections of the Nervous System, the observations are based principally on *ex-parte* statements of patients; for instance, here is Case III.: "A lady now under my charge informs me that whenever her emotions of anger are excited, she and those near her are sensible of the fact that she exhales from the skin of her head, neck, and chest a marked odour of pineapple," *voilà tout*. The illustrations are, with a solitary exception, taken from the gentler sex, and vary from rosaceous (amative), violaceous (hysterical), and pineapple (combative), all the way to the odour of sanctity and Limburger cheese! The observations of Dr. Preismann, of Nicolaëff, regarding the odour of the breath after coitus is not referred to, unless it is meant to be included in the rosaceous odour, whose existence is sustained by the veracious testimony of a New York gentleman, who informed Dr. H. that his mistress "gives off a very decided rosaceous odour at such periods."

If a new nosology is scented in the foregoing remarks, and a new specialty is to be entered, it is evident that the Roman beak will again be in demand, and that physicians with extraordinary olfactory facilities will have great natural advantages in the way of diagnosis, not to speak of prognosis or therapeutics.

F. W.

ART. XXXVII.—*Transactions of the New York Pathological Society*. Vol.

II. Based on the proceedings of the year 1875, and largely supplemented from the records of 1844 to 1877. Edited by JOHN C. PETERS, M.D., President of the Medical Society of the County of New York, etc. 8vo. pp. xvi., 291. New York: Wm. Wood & Co., 1877.

WE are glad to see that this volume enjoys the same advantage in its editorial relation as the former, which was noticed in our number for July, 1877. Dr. Peters, one of the constituent members of the Society, by his years of experience is peculiarly qualified for the task of condensing and arranging the material stored up in the archives of the association. In the two volumes that have thus far appeared, this duty has been judiciously performed, and the practical value of the work has been increased by the addition of notes giving in brief the present pathological views on the different topics discussed. The number of rare and interesting diseases represented by the specimens presented at the meetings of the Society for the last thirty four years, is very large; and it is supplemented by a number of cases which the enterprising members from time to time translated from foreign journals and made the subject of reports to the Society; so that the statement of the editor in his preface is perfectly comprehensible, that, "In fact, it may almost be said that no disease, however apparently unique, has not its counterpart in our archives; few so rare that we cannot produce several examples of them; whilst those which are generally considered infrequent can often be shown by the score, or more."

The description of cases and the discussions are models of conciseness; while particularly interesting subjects, such as Portal Phlebitis, are selected for comprehensive reports from current literature.

As the former number was devoted to the consideration of cases of diseases of the nervous system, and of the organs of respiration, circulation, and digestion, so the present volume continues the latter topic by illustrations of diseases of the stomach, pancreas, liver, and intestines.

The fact that many of these cases have been for several years the property of medical literature, relieves us from the necessity of making extended note of them at this time, while it does not detract from, but rather increases the value of, the series as works of reference. A case of perforating ulcer of the stomach, which opens the volume, although reported by Dr. Janeway in 1870, is of such present interest that we are induced to give, in outline, the main details of the case.

A woman, 34 years of age, who had suffered from previous attacks of hæmoptysis, and occasional fits of vomiting, was seized, three weeks before her death, with a chill, followed by fever, vomiting, and diarrhoea, and was admitted into the hospital. She was very weak and occasionally vomited blood, and complained of pain in the stomach, increased by food. She shortly died of asthenia. Cheesy deposits were found in both lungs at the apices. The liver was fatty, and a sac was discovered containing gas and a sour-smelling, black-coloured fluid, with a slight amount of fine solid contents, situated in the epigastric and left hypochondriac regions. The necrosed portion of the stomach was about half an inch from the pylorus along the greater curvature, and was one inch in diameter. A fibrinous plug was found in the gastro-epiploic artery, which "looked very much like an embolus, although there was no point to which it could be traced."

Had this abscess been recognized during life it would have raised an interesting question of treatment, since it is well known that spontaneous perforation of the stomach and abdominal wall by a foreign body has been followed by recovery; and gastrotony, also, has frequently furnished equally favourable results. Since these cases attract the attention of both physician and surgeon, it is to be regretted that in the present record no microscopical examination of the walls of the vessel involved has been contributed, and the presence or absence of incipient tuberculization of the intestines and omentum, is likewise left for conjecture. No mention is made of the condition of the endothelium of the heart and aorta, or even of the cardiac valves, unless they are included in the general statement that "the other organs were healthy." Indeed, as a work on pathology, it lies broadly open to the criticism of lack of system in recording examinations, particularly the meagreness of the results of microscopical observation. In point of fact, material of great practical value has been allowed to go almost fruitless, from the need of careful study, intelligent and conscientious analysis, and systematic record; for the want of which the present series must come far short of its possible usefulness. A committee on microscopy existed; but apart from one brief report on page 42 (which has no apparent relevancy to the case whereto it is appended), we find no other evidence of its existence, except among the list of officers and committees.

Mention of over three hundred cases is made, and some interesting tables are given, including those of operations for ileo-cæcal abscess, intussusceptions, and of 258 cases of intestinal obstruction. Dr. Delafield contributed a tabular statement of sixteen cases of perforation of the vermiform appendix.

Among the more interesting cases, we notice one of a man, 54 years of age, where there was complete blocking up of the duodenum by gall-stones in such a way as to prevent the passage of food from the stomach. No statement is given as to the condition of the intestine. A case of congenital occlusion of the duodenum, with rudimentary and imperforate ureters; one of death following incised

wound of intestine, possibly caused by a suture three inches in length, which, instead of being cut off close, was allowed to dangle in the peritoneal cavity; a curious instance of perityphlitis and abscess in the *left* iliac region, the caecum having taken this position during an attack of diarrhoea, and afterward contracted adhesions; and several interesting cases of pin-hole perforation of intestine, leading to fatal peritonitis, are reported. A case of a girl of 17 is given, where there was extensive sloughing of the bowels, about five feet of intestine being discharged. The patient died four months later of emaciation. A polyp on the peritoneal surface of the ileum was the supposed cause of the invagination. Interesting cases of vesico-intestinal fistule are also detailed, where lumbricoid worms were discharged from the urethra, and various foreign bodies found their way into the bladder. Hæmatoma of the pancreas occurred in a hæmophile, with obstructive jaundice, and emaciation and death from asthenia. One case of ulcer of the rectum was converted into a recto-vesical fistule by a dose of five cathartic pills, given by a "homeopathic" practitioner. Lumbo-colotomy was performed, but the patient died from pyæmia on the twenty-second day after the operation.

F. W.

ART. XXXVIII.—*Public Hygiene in America. Being the Centennial Discourse delivered before the International Medical Congress, Philadelphia, Sept. 1876.*

By HENRY I. BOWDITCH, M.D. With Extracts from Correspondence from the various States. Together with a Digest of American Sanitary Law, by HENRY G. PICKERING, Esq. 16mo. pp. 498. Boston, Mass.: Little, Brown & Co. London: Trübner & Co., 1877.

THERE is very little of the "spread eagle" quality in Dr. Bowditch's discourse. Here, as in other of his efforts to elicit or to communicate truth, he makes great use of the numerical method. A series of questions, skilfully devised to allow of brief or even monosyllabic answers, was arranged to obtain exact information upon the present condition of State preventive medicine. The subject is viewed from the medical, the legal, and the social points of view—the questions covering nearly all matters bearing upon the public health. Correspondents were selected so far as was possible from among medical men known to be interested in sanitary science. Only two territories, and no States, are unrepresented among the responses which serve as basis for this discourse.

Before presenting the results of his inquiries, however, Dr. Bowditch sketches the changing phases of medical opinion during the century. The period from 1776 to 1832 is characterized as an epoch of medical system-making, of blind faith in drugs, and of utter overlooking of Nature's healing power. Then came a time when doubt, exact observation of disease, and of the effect of drugs, began to supplant the unquestioning adherence to tradition and to authority. As a period of reaction, this was probably attended with a too great reliance upon Nature's resources, and too great distrust of the medical weapons formerly so revered. The introduction of the "numerical method" into the observation of the course of diseases and the result of treatment, and the grand idea of the self-limited character of many maladies, especially distinguish this epoch. The third and present epoch is counted from the foundation of the first State Board of Health in 1869. Preventive medicine can be truly such, on any considerable scale, only through the co-operation of the people, or, in other words, the State, with the medical profession. This present grand and hopeful era—while gradually leading to a juster valuation of the precise scope and power of the healing art, and learn-

ing to measure with exactness the methods by which drugs act, and the limits of their efficiency—is yet pre-eminently distinguished as aiming rather to remove or prevent causes of disease, than to treat the perfected results. And we doubt not that Dr. Bowditch is right in predicting for preventive medicine an ever-growing importance.

The responses to circular letters of inquiry, as here collated, present a synopsis of the progress and results of public hygiene and State medicine, as illustrated by legislation, public opinion, professional views and measures, the teachings and practice of educational establishments, in all sections of our country during its century of national life.

Three-fourths of the volume is composed of appendices. One of these presents copious extracts from the correspondence elicited by the circulars. These excerpts depict the opinions and customs of the people, and the local peculiarities, from a sanitary point of view, of the districts inhabited by the writers. Another appendix deals with hygiene and preventive medicine as practised and taught in schools of various grades.

Henry G. Pickering, Esq., contributes a digest of the laws, national and State, looking towards the health of the people. The legislation of each State is separately presented from its admission to the Union to date of the preparation of the discourse. Fifteen States have health board:—nominally, at least. What mighty powers for good these may be made is obvious to all who have become acquainted with the work of the Massachusetts and Michigan organizations, as shown in the reports noticed in former pages of this *Journal*. Pennsylvania has yet to add her name to the list of States that acknowledge their obligation to protect the health of their citizens by the best means yet devised.

The very important observations of Dr. Bowditch, as to the relations of soil-moisture to consumption, form the subject of a brief chapter.

One or two other brief appendices go to complete this thoroughly earnest and practical summary of American effort in sanitary science. Altogether, we find here a reference book of permanent value.

B. L. R.

ART. XXXIX.—*Du Bégaiement et de son Traitement Physiologique*; par le Dr. JULES GODARD. 8vo. pp. 64. Paris: J. B. Baillière & Fils. 1877.

Stuttering, and its Treatment on Physiological Principles. By Dr. JULES GODARD.

THIS little pamphlet, commencing with a brief historical sketch of the theories and methods of treatment of previous writers, is mainly an exposition of the views of M. Chervin, of Paris, as to the nature of stuttering, with an account of his method of treatment. Adopting M. Moutard-Martin's definition of stuttering as an intermittent choreic state of the apparatus of phonation and respiration, M. Chervin divides the subject into—I. stuttering during *inspiration*; II. during *expiration*; and III. either *between* or *during* both these periods. Then, since the trouble in phonation and respiration may be complicated by various irregular movements (of the jaw, tongue, lips, muscles of the face, neck, or even of the limbs), he has subdivided each of the foregoing classes into those states in which stuttering is and is not accompanied by grimaces, thus making a classification which appears useless from a therapeutic point of view, since all classes are subjected to the same treatment, while it is not sufficiently analytic or precise to be of physiological value. The treatment recommended is divided into three stages. In

the first, that of respiratory exercise, the pupil is taught by imitation, first to make a long, full inspiration and follow it by a regular forcible expiration; then the respiratory movements are made with various rhythms until they become full, regular, and easy, instead of being jerky, interrupted, and accomplished with evident effort and fatigue. In the second stage of treatment, exercises with the vowels are substituted for the previous mute breathings, giving to each vowel the various modifications of tone, pitch, duration, etc., in which they occur in ordinary conversation. The third stage consists of exercises with the consonants, alone and in combination with the different vowels, the correct position for the tongue and lips being demonstrated for each letter of the alphabet; these exercises are repeated at first slowly, then rapidly, varying the pitch and duration of each syllable and passing from words of one syllable to those of two or more. Prepared by these exercises, the pupil then learns to articulate, slowly and methodically, short sentences, then periods, paragraphs, etc., separating each sentence, and always commencing with a deep inspiration.

This system of treatment, of which we have given the outline, differs in no important respect from that long employed, more especially in Germany, with the exception of the fact that it only lasts twenty days. M. Chervin also, as reported by Dr. Godard, differs from most others in giving an almost universally favourable prognosis as regards cure and freedom from relapse, a result which seems to be substantiated by the cases reported, although we could wish they were a little fuller as to detail. Thus, in twenty-three cases occurring during one session, freedom from relapse is only noted in six cases; they were all, however, with one exception, cured at the end of twenty days. R. M. S.

ART. XL.—*Two Lectures on Convulsions and Paralysis as Effects of Disease of the Base of the Brain.* Delivered by Prof. BROWN-SÉQUARD before the Philadelphia County Medical Society, Feb. 15 and 16, 1878. Stenographically reported by FRANK WOODBURY, M.D., Reporting Secretary. Pamphlet. Pp. 32. Philadelphia, 1878.

IN the excellent report which Dr. Woodbury has furnished of these lectures is to be found, in a matured form, the views which have been occupying the attention of their distinguished author for a number of years. While not entirely novel to us, since Dr. Brown-Séguard has indicated in several recent papers his gradual evolution of the views here presented, this is the first opportunity afforded us of appreciating the extended series of facts which can be brought forward in their support. The points in the physiology and pathology of the nervous system to which Dr. Brown-Séguard takes exception, theories which he was mainly instrumental in erecting and which would alone entitle his later observations to serious consideration, are first, that one side of the brain does not move the opposite side of the body, and second, that the anatomical decussation of fibres which is known to take place in the medulla is not a physiological decussation, is not a crossing of the motor paths in the cord. Without attempting to give even an outline of the grounds on which these theories have been discarded, that which Dr. Brown-Séguard offers as their substitute is briefly, as follows:—

First, that each side of the brain is sufficient to act on each side of the body, but not through direct continuity of motor fibres; secondly, that in certain tracts in the base of the brain a very small number of fibres may be perfectly competent

to transmit the orders of the will; and, thirdly, that paralysis and convulsions, instead of appearing from loss of function in the part diseased, will bear some other explanation.

Under the influence of an irritation, starting either in the neighbourhood of or remote from certain cells, and acting upon them, we may have the function of those cells excited and thrown into action, that action depending upon the property of the cells excited. As, for example, the irritation set up by disease of the brain may be conducted to the place in the cerebro-spinal system restraining the motor centre of one limb; there will consequently be paralysis of that limb produced in the same manner in which either direct or indirect stimulation of the vagus may paralyze the heart. In other words, all paralyzes are caused by the conduction of inhibitory influences from disease of a more or less remote point of the nervous system to the motor centres of the part paralyzed. According to this theory, all those perplexing cases can be explained, in which disease in a certain portion of the brain may be followed in one instance by paralysis on the opposite side of the body, in another, on the same side, in a third, on both sides, and in another case, the disease being the same there may be no paralysis at all. This variety of effect certainly cannot be explained as due to the interruption of conduction of motor impulses, for, according to such an anatomical explanation, the same anatomical cause should invariably be followed by the same effect; one such exception should be enough to overthrow this explanation. On the other hand, according to this theory of conduction through various channels of an inhibitory influence, the variety of effect from one cause is only analogous to the different effects produced by the exposure of different individuals to the same morbid cause, a fact only to be explained as due to the special predisposition and susceptibility of the individual. Again this theory of reflected irritation will alone explain the fact that section of the anterior columns of the cord is invariably followed by paralysis, while section of their upward continuation, the lateral columns of the medulla, is followed by no paralysis; in fact, there is in the medulla no bundle of white fibres which may not be divided without producing paralysis. As regards the remaining view suggested, if it is admitted that only a very few fibres are essential in carrying the motor impulses from the will, then it is not necessary to suppose that these fibres go all the way from the brain through the medulla and spinal cord to the muscles (a supposition rendered untenable by the fact that the decussating fibres, which undergo degeneration after disease of the brain, are not motor fibres, and have been traced to regions in the cord which contain no motor paths), but that the primary exertion of the will sets into continued action various nervous centres in the medulla and cord.

R. M. S.

ART. XLI.—*The Action of Medicines.* BY ISAAC OTT, A.M., M.D., formerly Demonstrator of Experimental Physiology, University of Pennsylvania. 8vo. pp. 168. Philadelphia: Lindsay & Blakiston, 1878.

THERE are few departments of scientific medicine more worthy of attention, or whose pursuit has been more fruitful in valuable results, than the study scientifically of the action of drugs on the lower animals. Setting aside the fact that by this means alone are we able rationally to explain the *modus operandi* of drugs, the advance which has been given to pure physiology through the study of the actions of poisons, is almost incredible. To Bernard we are indebted for the first application of this principle, and to his labours we owe the major part of the

results obtained through this mode of investigation. In his studies of curare, carbonic oxide, sulphocyanide of potassium, etc., we have become acquainted with some of the most important laws and facts of physiology.

Through the experiments of Heidenhain with atropia we have learned the existence of the secretory nerves, properly so called, while to the investigations of Von Bezold and Blobaum with the same drug, we owe the great part of our knowledge of the cardiac functions of the pneumogastric nerves: in fact the present extended knowledge which we possess of cardiac physiology is mainly due to the experimentation of Schmiedenberg and others with drugs, such as muscarin, atropin, nicotine, etc.

These then are some few of the facts in physiology acquired through the study of the action of medicines; though much has already been accomplished, there still remains an extended, unbroken field, inviting study. "All poisons are capable of becoming, in the hands of the experimenter, vivisection instruments of the greatest delicacy and importance." The advances also which have been made in toxicology through the study of the antagonism of drugs is incalculable.

And yet, in spite of the importance of this field of investigation, the work under consideration is the only one in the English language which can offer, with any degree of completeness, that assistance and instruction so essential to the correct and successful study of pharmacology. In fact the only other work we are acquainted with in any language that treats fully of this subject is *Hermann's Lehrbuch der Experimentellen Toxicologie*, and this being in a foreign language is inaccessible to many, while the work of Lauder Brunton, commenced in 1871, has never reached completion, treating alone of the action of drugs on the circulation. In the book before us, however, filling as it does this gap in medical literature, we have a work which cannot fail to be of the greatest value to the student of pharmacology. From the pen of a man himself no novice in the subjects of which he treats, it bears upon it the impress of reliability, due to the author's own experiences, a virtue too often wanting in mere compilations of the works of others. But while it is valuable as presenting a concise summary of the present state of our knowledge as regards the physiological action of remedies, it will be chiefly valuable to him who wishes himself to experiment.

The work is divided into four chapters. Chap. I., on "How to Study the Physiological Action of Medicines," is occupied with a detail of all those minutiae which are so essential to successful experimentation, and with an account of the necessary apparatus with directions for their use, while on pages 23 and 24 is given a short account of the main points in physiological anatomy necessary to the experimenter on the lower animals. In Chap. II., "On the Nervous System," the author first gives a brief outline of the main points in the physiology of the nervous system, and then passes on to the consideration of the method of experimentation in determining the action of drugs on the various integral parts of this system, as the brain and spinal cord, motor and sensory nerves, etc. In this chapter he also considers the modes of studying the action of drugs on the muscles, a subject of sufficient importance, we think, to be entitled to a chapter exclusively to itself. In Chapter III., on the "Action on the Circulatory Apparatus," the best and last of this section of his book, Dr. Ott gives an exceedingly clear and concise account of that very difficult subject, cardiac physiology: indeed, this chapter alone would serve to render his book of the greatest service to the student, so apt to be puzzled by this subject. The method which he has employed here, as well as in the previous chapters, of introducing under each heading details of actual experiments, cannot fail to impress on the mind of the reader both the functions of the organs experimented on and the characteristic action of the drug in question, while the experiments themselves serve as models to those who wish to

become original investigators. The remaining portion of the chapter is occupied with the considerations of the methods of studying the rapidity of the circulation, measurement of arterial tension, action of the vagi, accelerator nerves, action of drugs on the bloodvessels of excised organs, and on the heart of the frog.

In Chapter IV., "On the Action of Medicines," there is presented a brief statement of the action of the various alkaloids and principal drugs on the lower animals and on man in health and disease, with a bibliography of the more important works on each subject. While we cannot but think that this portion of the work is supplementary in importance to the chapters on the mode of studying the action of drugs, it still presents in a concise form, though incomplete as to the number of drugs, the accepted doctrines as to the action of each remedy. R. M. S.

ART. XLII.—*The Elements of Therapeutics.* By Dr. C. BINZ, Professor of Pharmacology in the University of Bonn. Translated from the fifth German edition, by EDWARD I. SPARKS, M.A., M.B. Oxon. 12mo. pp. 347. New York: Wm. Wood & Co., 1878.

THIS book is a "clinical guide to the action of medicines," embracing many of the modern views of therapeutics, together with a discussion of the physiological operation of drugs, and a very full materia medica list. For its small size it contains considerable practical information, and is arranged conveniently for reference. The physiological data are introduced mainly as a basis upon which to found a rational system of therapeutics, though in the case of the more important drugs sufficient space is allotted to this branch of the subject to make it a prominent feature. In connection with this class of drugs some detailed and accurate accounts of physiological action are given, among these may be instanced that of alcohol and those of the group Antipyretica, including cinchona, salicylic acid, and the mineral and vegetable acids. On the other hand, there are numerous dogmatic statements which are open to criticism, and a noticeable disregard for the opinions of other experimenters. Thus it is asserted that digitalis, in poisonous doses, arrests the human heart in diastole; whereas experiments upon animals show that the arrest occurs almost uniformly in systole. Again the power of lessening the reflex activity of the spinal cord possessed by chloral and bromide of potassium is but remotely referred to, and the reader is left in doubt as to whether strychnia produces tetanic convulsions by paralyzing Setschenow's centres, or by directly stimulating the spinal cord, the latter mode of action having been proved by the experiments of Van Deen. The therapeutical indications are stated clearly, and, with a few exceptions, are in accord with the teachings of the best authorities, while more than usual care is taken to point out the best methods of administration to obtain the results desired. The materia medica list includes many of the preparations which are peculiar to the German Pharmacopœia, together with all of those official in the British and United States Pharmacopœias. The strength of all the preparations and the ingredients of those which are compound in nature are given. In the former particular many errors have been made in the preparations of the United States Pharmacopœia, and sufficient uniformity has not been observed in giving both the English and American official names, in cases of dissimilarity in this respect. Several substances are briefly considered, which, though used in medicine, have not yet found a place in our ordinary text-books; those most worthy of mention are æther petrolei, fel bovinum purificatum, serum lactis, and pilocarpin.

The doses of the different medicines are correctly estimated, and are expressed both in the terms of the metrical system and in those still in use in this country and Great Britain.

The classification adopted is too general, many drugs having well-marked points of difference in physiological operation and distinct therapeutical applications being considered side by side. In fine, while the physician may, with advantage, add this book to his library, it is deserving only of a qualified recommendation to the student.

L. S.

ART. XLIII.—*Die Formen des Harnöhrentrüppers und die endoskopischen Befunde derselben*; von Dr. JOS. GRÜNFIELD in Wien., aus d. Med. Jahrbüchern IV. Heft 1877.

The Varieties of Urethral Catarrh and their Endoscopic Appearance. By Dr. JOS. GRÜNFIELD, of Vienna.

THE endoscope is an instrument which, though possessing a certain value, is hardly likely ever to come into general use. Few surgeons, and fewer general practitioners are in a position to own or employ it, and the pain and annoyance it gives the patient are often enough in themselves to counterbalance any good attained by its use. But there is a field in which it may be made of service to the whole profession. Such a field is that which forms the subject of the monograph before us, in which are recorded with characteristic faithfulness and due regard to the work and opinion of others, the endoscopic appearances in various forms of urethritis as studied by Dr. Grünfeld. The advantage of distinguishing between different lesions, which may produce very similar external manifestations, we acknowledge at once, and in these days of analysis and special study, welcome every effort such as this to bring out the details of a subject which as a whole may prove misleading.

Dr. Grünfeld divides urethritis into five classes, viz. :—

I. *Urethritis Blennorrhæica*.—In which there is acute inflammation of the mucous membrane, with marked swelling, dark-red colour, profuse secretion, and a tendency to bleed on slight provocation. This form may usually be diagnosed from the condition at the orificium urethræ, which represents pretty fairly the condition deeper down.

II. *Urethritis Membranacea*.—By this is not meant the “erupous urethritis” of certain authors, but a form in which there is less evidence of a high grade of inflammation than in the preceding, less secretion of pus, less swelling of the mucous membrane, and the presence, as characteristic, of a thin membranous exudation, usually arranged in longitudinal streaks, which can be removed only with difficulty, this being apt to be followed by bleeding. The symptoms which are appreciable without the endoscope are marked œdema of the cutis penis, with inflammation of the lymphatics on the dorsum and finding in the urine the detached membrane, in the form of leathery, tube-like casts.

III. *Urethritis Simplex*.—This may be simply an hyperæmia, caused by forced coitus, or the long-continued use of instruments. In the worst cases the evidences of inflammation are much less than in the first form.

IV. *Urethritis Granulosa*.—This term though not scientifically exact, is used to designate a condition, first studied by Désormeaux, analogous to granular conjunctivitis. In it the endoscope shows a limited, single area, of a dull red, velvety appearance, with little pus, accompanied by rigidity of the walls and narrowing of the lumen of the urethra. This is very often the lesion upon which depends gleet, and is the usual source of stricture. But it must be noted that neither it

nor stricture is, as Désormeaux thought, most frequent in the deeper portions of the urethra. The external signs of this condition consist of localized tenderness or pain, and the presence of small shreds in the urine; without the endoscope it is very difficult of accurate diagnosis.

V. *Urethritis with Ulceration*.—This Dr. Grünfeld believes to be extremely rare, yet describes phlyctenular or herpetic ulcers, those excited by mechanical irritation, chancres, and chancreoids.

A slight modification of this classification, so as to make the order I. Urethritis Simplex; II. Urethritis Blennorrhœica; III. Urethritis Membranacea; IV. Urethritis Granulosa, and to omit altogether the form dependent upon ulcers, would perhaps make the work more exactly what its title leads us to expect. This, however, is of little moment in comparison with the practical merits of the monograph, whose main points are stated above.

C. W. D.

ART. XLIV.—*The Treatment of Spina Bifida by a New Method*. By JAMES MORTON, M.D., Professor of Materia Medica, Anderson's University. 8vo. pp. viii., 120. Glasgow: James Maclehose, 1877.

THE treatment of spina bifida by a new means rather than a new method would be the proper title of this book. Velpeau, Brainard, Holmes, and others have used iodine with fair success, but Dr. Morton, so far as the small number of cases go, has added an apparently better means of using the iodine. He dissolves ten grains of iodine, and thirty of iodide of potassium, in an ounce of glycerine and injects from half a drachm to two drachms of this solution into the sac after withdrawing about half of its contents, and he is careful to prevent further escape of the fluid by the application of collodion and pressure. Glycerine is chosen as the vehicle because of its slight diffusibility. The operation is repeated at intervals of a few weeks. The results in the fifteen cases have been twelve recoveries, and three deaths, and all of his own lumbar cases have recovered. This is certainly a very favourable showing in a disease which has generally been deemed incurable, and should lead to a more extensive trial of the means he has suggested. The book is handsomely printed, but is marred by occasional blemishes in proof-reading. Thus "cyst" is spelled "cist" (p. 23), "grs." becomes "qrs." (p. 53), and probably even the printer's devil would have scarcely overlooked "Velpeare" (p. 12), which does duty for the name of the famous French surgeon.

W. W. K.

ART. XLV.—*On Hospital Organization, with Special Reference to Hospitals for Children*. By CHARLES WEST, M.D., etc. etc. 24mo. pp. 97. London: Macmillan & Co., 1877.

THIS little book, by a man long acquainted with hospitals, is characterized rather by intelligent appreciation of things needed than by any particularly original suggestions for their attainment. To American eyes the ordinary administrative machinery of an English hospital appears somewhat ponderous, though indeed the details vary considerably in different charities. There has appeared, however, of late years, a tendency—not yet very strong, but still real, and sure to

grow—towards a simplification of the processes by which the wealth of the beneficent, living or dead, is made to succour the sick and poor of to-day. We are sorry that Dr. West, while recognizing and welcoming this beginning of change in his most conservative country, does not attempt a little more in the way of helping it on. It seems to us that he might give a little more weight and prominence to the position of “Director,” insist on his being a resident, and, above all, recognize the very great importance of making him invariably a medical man. To such a superintendent, wisely chosen, we believe the entire control of the economy and discipline of a hospital may be entrusted with the greatest benefit. For the results of his management he would, of course, be accountable to the “committee” or board which appoints him. With such an officer, we are disposed to believe that the sub-committees here mentioned, the “medical” and “house,” may be dispensed with. All such officials as “housekeeper,” “superintendent of nurses,” etc., should, of course, be strictly subordinate to him.

Considerable space is devoted to the “question of sisterhoods.” As to entrusting the nursing to these orders, arguments and opinions *pro* and *con* are presented with such impartiality that it is hard to tell the writer’s own view. To placing the entire management of English hospitals in such hands, he is opposed.

Dr. West’s views upon the individual qualifications of nurses are very sensible. If a cultivated lady has leisure, and a call to devote herself to nursing, let her become a hospital nurse; but let her reach the higher positions only through experience and faithfulness in the lower. And after all, “the truest sympathy, the most practised skill in nursing the poor will be found among the poor themselves. Make the position an honourable one . . . but do not foster the delusion that those are best fitted for the work, or will do most good in it, who find or fancy that there is no scope for doing their duty in that state of life ‘to which it hath pleased God to call them;’” and who trade not on the talent entrusted to them, but upon some other for which whim impels them to exchange it.

A few well-considered pages deal with training of nurses, as practised and practicable in English hospitals, especially for children.

A training-school and home for nurses, near and connected with a hospital, is advocated, both for its educational benefits, and as a resource in emergencies requiring additional care in the hospital.

Suggestions upon the details of nurse’s work show much experience and closeness of observation. Valuable hints, too, concerning diets and the care of soiled clothing, are briefly given.

The great perplexity of the age—the gratuitous treatment of out-patients—receives close attention from our author. By an apparently judicious set of regulations, prescribing certain inquiries as to the pecuniary means of applicants, he claims to have reduced the yearly beneficiaries of one out-patient department from 13,000 to 9000, without excluding worthy cases. Since his retirement from control of the hospital, however, his plan has been abandoned—seemingly on insufficient grounds.

We cannot but deeply regret the unhappy circumstances which led to the severance of Dr. West’s connection with the Hospital for Sick Children—the dream of his youth and the occupation of thirty years of his manhood, as he pathetically calls it. Even yet, however, he would continue its benefactor, since this little work is published for its benefit.

B. L. R.

ART. XLVI.—*Fourth Biennial Report of the State Board of Health of California.* For 1876 and 1877. 12mo, pp. 92. Sacramento, 1877.

HAD this Board achieved no other result, its action in regard to smallpox would alone have amply proved its value. Upon the outbreak of this disease in San Francisco in May, 1876, a supply of fresh bovine lymph was obtained from the vaccine farm in Wisconsin. This was distributed gratuitously among the physicians of the city and State. Of the three hundred and seventy-seven deaths recorded, only thirty-two were outside of San Francisco. Considering the constant currents of travel from this centre towards all parts of the State, we have no doubt that the Board prevented, by the action noted, and by its judicious measures for isolation, a very much more extended epidemic.

As in the Atlantic States, the summer of 1876 was characterized by extraordinary heat. Deaths by sunstroke, hitherto almost unheard of, and a marked increase of cholera infantum, were among its results.

Diphtheria was prevalent, and contagious; it especially prevailed among the filthy and unwholesome abodes of the lowest classes. Some hundred and fifty or more deaths from this cause occurred in San Francisco, with a population of 288,000.

The great problem of caring for the sick children of the very poor, and especially for those children that have been abandoned at birth, meets with thoughtful attention. The idea of a sanitarium, in some of the many salubrious sites of easy access from the city, where pure milk might be more than an abstraction, and all surroundings wholesome, where provision could be made for the proper classification and treatment of the various sorts of needy and suffering children, is suggested as an experiment worth making.

The relations of the various California climates to the development or arrest of phthisis, are set forth at some length by Dr. Hatch, the Secretary of the Board. While little doubt exists as to the good effect of residence in certain of the coast towns, and certain more elevated districts, upon persons in the earlier stages of the disease, no encouragement is held out to expect benefit in advanced conditions.

Another writer desires that a hospital for consumptives be established by the State in a favourable location.

It may be that adulteration of food and drink is carried further on the Pacific coast than in this part of the country. Still, we can hardly swallow "specimens of whiskey" containing *forty per cent.* of "methyl, or methylic alcohol, or wood-spirit, besides common alcohol and a sufficiently large quantity of fusel oil to render it liable to produce insanity, among other injurious effects." Such loose and extravagant statements bespeak fanaticism rather than the scientific spirit. What is the percentage of fusel oil liable to cause insanity, "*among other*" ills? We believe the present writer is not responsible for originating the absurd notion that "ginger ale" is a fraud, because, forsooth, it is not an ale at all,—although he repeats the complaint. There is just the same ground for indignation in this case, that exists in regard to the "root beer" of our grandmothers, and no more. No one ever pretended that either article had undergone alcoholic fermentation; and the one like the other is expressly designed and understood to be a beverage wholly devoid of power to intoxicate.

B. L. R.

ART. XLVII.—*Report upon the Census of Rhode Island, 1875; with the Statistics of the Population, Agriculture, Fisheries and Shore-Farms, and Manufactures of the State.* By EDWIN M. SNOW, M.D., Superintendent of the Census. 8vo. pp. clix. and 159. Providence, R. I., 1877.

To all interested in statistical work, or desirous of studying any one of the subjects embraced in the scope of this State census, we can safely commend Dr. Snow as a trustworthy guide and teacher. Many years of constant practice in this kind of labour have taught him that most difficult art, the interpretation of statistics, and also given power to distinguish at a glance the presence of error or uncertainty in particular classes of returns.

We propose here to notice only a few scattered points, possessing some interest from a medical point of view.

The population of African descent does not maintain its numbers in New England at large, and barely so in Rhode Island. Recent increase in the absolute number living in Rhode Island is chiefly due to immigration from the South. In no northern State has their social and political standing been better, or as good. Climate seems to be the cause of the heavy death-rate prevailing among them, even in this State, which is warmer than most.

Dr. Snow's presentation of the facts as to the parentage of population at different periods continues to possess very great interest and importance. For though, as he says, children born on the soil are technically Americans, yet in many momentous aspects a large proportion will retain the characters of foreigners.

In the last ten years, population of American parentage has increased 12.89 per cent., against that of foreign parentage 80.11, and mixed 39.61 per cent. Allowing these rates of increase to have continued, a majority of the citizens are to-day of foreign parentage.

Commenting upon tables showing numbers of persons living at different ages, the visible effect of the civil war is pointed out, in diminishing the children under five years, by the census of 1865, and those from five to ten in 1870, and ten to fifteen by the present census. "It is easy," says the writer, "by study and reflection, to clothe columns of dry figures with a living interest."

Living at the age of 90 years and over, are reported 163 persons. The highest figures, not commended to absolute belief however, are 120, 107, 106, 104, etc. The third named was a white American, the first, coloured, and second, Irish.

As having a most important bearing upon the revolution which is in progress in the character of population, a table for the city of Providence shows, for 9159 American-born matrons of child-bearing age, 1227 children born in 1875, against 4335 Irish matrons with 948 births. Thus in the same year and the same age-period, we have 7.46 as the ratio of American matrons to each child born, and 4.57 as the proportion of Irish mothers to their infants. British matrons occupy an intermediate position. The Germans nearly equal the Irish in fertility, though their numbers are absolutely very much smaller. Such figures have a most painful significance.

The large number of children absent from school excites the more alarm, as they are from the classes most needing the elevating effects of education. Violation of the laws against employing children in factories, and the avarice of parents in working them from the earliest possible period, are largely responsible for this state of things. Besides growing up in ignorance, these children are deplorably injured in health and development. A most earnest protest is made against the terrible cruelty thus perpetrated. We trust that, hereafter, attempts will be made at least to enforce the existing laws, which wholly forbid factory work to children under twelve years, and allow only limited work, with prescribed schooling, to those from twelve to fifteen.

B. L. R.

QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

The Functions of the Retina.

THE determination of the functions of the retina, in regard to the perception of magnitude and of colours, has been of late exercising some excellent experimenters and ophthalmologists, and the results at which they have arrived may here be shortly given; and it is not uninteresting to follow the various methods that have been adopted with the same object in view.

The sharpness or acuteness of vision in different parts of the retina—that is to say, its power of distinguishing minute objects—has been investigated by various observers. Lundberg's researches were undertaken with a view of determining the degree of acuteness in the immediate vicinity of the blind spot or point of entrance of the optic nerve. This was first roughly determined, and then squares of white paper of one-fiftieth, one-twenty-fifth, one-twelfth, and finally one-half of an inch in the side, were placed in a position nearly corresponding to the centre of the blind spot, and, with the aid of a Förster's perimeter, provided with a millimetre scale, slowly moved in all directions outwards. The first appearance of the angle of the square was noted, and a figure was thus constructed from which the diameter of the blind spot could be estimated. It was found that there was a difference in the figures obtained with the large and the small squares, the size of the blind spot appearing to be greater with those of one-fiftieth of an inch, and smaller with those of one-half inch on the side. Thus, with the former the vertical diameter of the blind spot of the right eye was estimated at 2.064 mm., and its horizontal diameter at 1.425 mm., whilst with the half-inch squares the horizontal diameter was 1.277 mm. and the vertical 1.298 mm. The difference between the two horizontal diameters was thus 0.148 mm., and of the two vertical diameters 0.766 mm. The sensitiveness of the retina near the blind spot is evidently, therefore, less above and below the entrance of the optic nerve than on either side. The figures obtained presented some irregularities and projections which were found to correspond to the position of the retinal bloodvessels.

Observations of a somewhat similar character were undertaken by Hen, who used letters of various size instead of squares, and found that the acuteness of vision at the margin of the yellow spot diminishes to one-half or even to one-third of that possessed by the fovea centralis, though on passing beyond the limits of the macula lutea the diminution takes place much more slowly. The breadth of

the zone in which, by unpractised eyes, letters can be distinguished, differs in the different meridians, and naturally to some extent in different persons. It is greatest in the outer parts of the field of vision, which corresponds of course to the inner part of the retina; next in the inner part of the field, then in the lower, and least of all in the upper part. Small letters near the eye are read at a greater distance from the fovea centralis than large, but more distant letters under the same visual angle. Practice, it is interesting to observe, made a great difference, though not equally in all directions. Thus, in the horizontal meridian, and externally, the breadth of the zone in which large letters could be read improved by practice from 45° to 80°, no less than 35°, in the inner part of the field from 38° to 55°, in the upper part of the field from 30° to 45°, and in the lower from 32° to 50°. This improvement, it is to be observed, simply affected the recognition of letters, and bore no reference to the perception of light, which remained unaltered by any amount of practice.

The latest observations that have been published on this subject are by Augustin Charpentier, in Brown-Séquard's *Archives de Physiologie*. This observer used a square composed of nine black dots, each having a diameter of 1.6 millimetres; and, having seated himself before a Förster's perimeter, and fixed the central spot of the instrument, he caused the square to be slowly moved outwards along different meridians till the dots could no longer be separately distinguished. The direction of the movement of the square was then changed, and it was brought up towards the eye, but at the same angle, till the dots could again be distinguished.

It was found that, whilst, when the square was directly looked at, the dots could be distinguished as separate at a distance of 3.50 metres, or nearly 11½ feet; at an angle of indirect vision so small as 5°, they could only be recognized as separate at about 1.50 metre, or 5 feet; at an angle of 10° at 3 feet; whilst at an angle of 30° the square had to be approximated to a distance of less than 10 inches in order that the several dots might be distinguished. From all these experiments, therefore, the same conclusions may be drawn that the sharpness of vision is very great at the yellow spot, but falls with great rapidity immediately beyond it.

Another point of interest that has lately been investigated, though there is some discrepancy in the statements, is the sensitiveness of different parts of the retina for different colours. Dobrowotsky, a Russian observer, finds that if the same illumination be given to disks of different colours, which is difficult to manage in practice, and these are gradually moved towards the point of fixation of the eye along different meridians, white, and, coincidently, blue, are first perceived in all parts of the retina, then green, and finally red. Chodin, on the other hand, though admitting that the various colours undergo some change of tint when seen by indirect vision, yet thinks that all colours can be recognized up to the most extreme limits of the retinal field. Woinow, again, speaks very definitely of the existence of three zones of perceptivity in regard to colours around the macula lutea. In the first, immediately surrounding this spot, all colours appear less saturated than in the centre, some of them being apparently "bluish" or "yellowish," constituting what he terms relative red and green eccentricity. In the second zone only yellow and blue are distinguished—his zone of absolute red and green eccentricity: mixed colours seen with this zone appear pure yellow if, when seen with the fovea centralis, they seem to contain much yellow or pure blue; if with central vision, they seem to have much blue in their composition. In the third, or outermost zone, perception of light remains, but no colour can be recognized. This zone, therefore, represents that defect of vision which sometimes affects the whole retina, and is termed achromatopsia, the play of colour being unperceived. From these observations Woinow is led to admit the existence of five different elements in the human retina—one, the rods, having for their function the per-

ception of light alone; and four kinds of cones, each adapted to perceive a fundamental tint—red, yellow, green, or blue—but having a very different distribution. In and near the centre all are present, though even in this zone the red are less numerous peripherally than centrally. In the second zone, in addition to the rods, only yellow and blue perceiving cones are present, whilst in the third zone the rods, or light-perceiving elements, alone remain. Woinow remarks that the red and green perceiving elements are very tender and delicate, and are the first to fail in function when the eye is injured, as in cases of contusion, whilst the yellow and blue perceiving elements are more resistant, and no case of their absence has hitherto been recorded. Klug's observations, which have been published in Graefe's *Archiv*, agree with those of Woinow, except that he makes a fourth zone within Woinow's red zone, in which only orange and violet are clearly perceptible.—*Lancet*, Feb. 2, 1878.

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On the Colouring Matter of the Retina in its Relation to Vision.

The discovery of the so-called "retina-red" or "retina-purple" by Boll, has led to the adoption, by some authors, of the hypothesis that the chemical products resulting from the decomposition of the retinal pigment by light, stimulate the terminations of the optic nerve; and that this photo-chemical process is an essential factor in ordinary vision. KÜHNE has set himself to show that this hypothesis is, to say the least, premature (*Untersuch. aus dem physiolog. Institut in Heidelberg*, Band i. Heft 2). He points out that the retina of many birds and reptiles, whose faculty of seeing is beyond question, contains no purple; and that this is likewise true of the most sensitive portion of the human retina—the *fovea centralis* and its immediate neighbourhood. The large retinal rods of the river cray-fish contain a great deal of pigment; but this is singularly indifferent to the action of light, exposure to the sun's rays for several hours failing to bleach it. From these considerations it is clear that the retinal pigment cannot be essential to vision in all animals; while, from its indifference to light in some of the invertebrata, it would almost seem to be analogous to the other varieties of colouring matter, so often present in different parts of the eye, *e. g.*, the yellow of the *macula lutea*, the coloured oil-drops in birds and reptiles, the yellow of the lens in many fishes, the orange protoplasm recently discovered by Dr. Ewald in the anterior layers of the cornea of the perch. The following experiments show that in the frog, whose retinal rods contain a very sensitive kind of purple, the power of distinct vision, and the faculty of distinguishing colours, survive complete bleaching of the retina by direct sunlight. Frogs exposed to the sun for more than an hour (the retina is quite decolorized by exposure for fifteen minutes) were found to be able, not merely to elude all attempts made to lay hold of them, but also to capture flies; blind frogs, of course, being unable to do either the one or the other. Again, if a number of frogs are confined in a shallow dish, one-half of which is roofed with green, the other half with blue glass, they will, in a short time, be found huddled together under the green portion of the roof. This preference for green over blue is exhibited by a vast majority, both of *Rana esculenta* and *R. temporaria*. Possible fallacies which might arise from the unequal diathermancy of the two kinds of glass, unequal intensity of illumination, etc., were carefully eliminated. It was conclusively ascertained that the preference was connected with the colour, and not with any other property of the glass. Having settled this point, Kühne introduced a number of blind frogs into a vessel of this sort, and found that they showed no preference for one part of it rather than another; while frogs that had been exposed to the sun for hours, and whose rods no longer contained any trace of purple, speedily took refuge in the green half of their prison-house.—*London Med. Record*, Dec. 15, 1877.

MATERIA MEDICA AND THERAPEUTICS.

Thymol; the new Antiseptic.

A rival to carbolic acid has certainly been discovered in thymol, the essential ingredient of the oil of thyme, which is prepared either by treating the oil of thyme itself with a strong alkaline solution, skimming off the thymene and cymol, which separate and rise to the surface, and precipitating the thymol which remains in solution with hydrochloric acid; or else (and this appears to be its most common commercial source at present) by distilling the seeds of *Pyechotis ajowan*—an East Indian umbellifer, which contain from 5 to 6 per cent. of their weight of this body. Thymol was discovered, according to Lewin, in 1719, by Caspar Neumann. Its chemical properties were first examined in detail by Leonard Doveri and by Lallemand; and its antiputrescent properties were first distinctly pointed out by Bouillon and Paquet, of Lille, in 1868, though they only used it to deodorize unhealthy wounds, and did not attribute any antiseptic properties to it in the present surgical sense of the word. These properties were first definitely recognized, in 1875, by Dr. L. Lewin, of Berlin (*Centralblatt Med. Wiss.*, No. 21, 1875, and *Virchow's Archiv*, Band lxy., s. 165), and by Husemann and Valverde (*Archiv für Exper. Path.*, Band iv.). Lewin, who worked in Professor Liebreich's laboratory, showed experimentally that solutions containing one part thymol per 1000 absolutely arrested saccharine fermentation; and that they powerfully retarded lactic fermentation, and checked various processes of decomposition, even when used in relatively small quantities. Lewin also first pointed out the comparative harmlessness of thymol internally administered; the absence of digestive disturbance after taking it, and its effect in checking abnormal fermentation in the stomach. He further directed public attention to the probable future of the drug as an antiseptic. Husemann's experiments, which were chiefly made on rabbits and frogs, went to show that thymol is *ten* times less poisonous to the organism than carbolic acid, and that hence in the quantities ordinarily used for antiseptic purposes it may be considered as entirely innocuous. He further showed that thymol is a far more powerful antiseptic than carbolic acid, that its local application to the skin either as such or in saturated solutions had no irritant effect whatever, and that in animals poisoned by excessive doses gastric erosions never occurred as they do in carbolic acid poisoning, but that, on the other hand, nephritis with albuminous urine and extensive fatty degeneration of the liver are nearly constant phenomena in these cases.

At present it is as an external antiseptic that thymol claims the earnest attention of the followers of Lister. The success which has attended its introduction into Professor Volkmann's clinic at Halle, as described by his assistant, Dr. HANS RANKE, in No. 128 of *Volkmann's Sammlung Klinischer Vorträge*,¹ is striking in the extreme, and we propose here to bring before our readers the method employed and the results obtained. In the main the general features of Lister's antiseptic dressing were retained by Ranke, thymol being substituted for carbolic acid with the single exception of the ligatures used for arresting hemorrhage and deep sutures, which were always made with carbolized catgut. Since thymol is not entirely soluble in water in the proportion of 1 to 1000, the following formula was, after the first few trials, exclusively used for antiseptic purposes: Thymol, 1 gramme; alcohol, 10; glycerine, 20; water, 1000 grammes. This "thymol solution," as it may be called for brevity's sake, has no corrosive action on in-

¹ Ueber das Thymol und seine Benutzung bei der antiseptischen Behandlung der Wunden."

struments immersed in it, and in this respect is superior to solutions of carbolic, and still more of salicylic acid. It causes, however, when sprayed over the hands of the operator, a lively sensation of burning, accompanied with redness of the skin; but otherwise has no irritant qualities. Anaesthesia of the skin and epidermic desquamation, both of which are liable to occur under the use of carbolic acid, were never once observed in the case of thymol, nor did it exert any irritant action on the respiratory organs. The gauze bandages used for Lister's dressing were composed of the following materials: 1000 parts of bleached gauze, 500 of spermaceti, 50 of resin, and 16 of thymol, spermaceti being substituted for paraffin as a non-irritant, its object, however, being the same—namely, to retard the evaporation of the somewhat volatile thymol. In these proportions the gauze is extremely soft and pliant, it can be accurately adapted to a wound, and “sucks up” (to use Dr. Ranke's own expression) “blood and the secretions of the wound like a sponge.” Owing to the impregnation of its fibres with spermaceti and resin, they are unable to absorb the fluid, and, as the latter distributes itself only in the meshes of the tissue, the bandage retains its elasticity in a high degree, even when thoroughly soaked. This thymol-gauze was directly applied to the wound, no “protective” being necessary, owing to the non-irritant quality of the thymol. Between the seventh and eighth external layers a piece of gutta-percha paper previously washed with thymol solution was inserted in place of the ordinary bat-lining, and the whole was firmly fixed to the body with a gauze roller soaked in thymol solution, and tightly drawn, so as to seal up the parts almost hermetically against the outer air. Under these conditions very little thymol evaporates, and even at the end of eight days a very strong smell of thyme is perceived on removing the bandage. The thymol-gauze should be kept in stock wrapped in parchment paper, which should only be opened at the moment of using. The bandage must be removed and renewed as often as the least trace of secretion reaches its surface; but this necessity arises very much less frequently than in the case of Lister's carbolic dressing. In no instance, however, was the same dressing allowed to remain unchanged more than eight days. On those parts of the body to which it was difficult to adapt the dressing, the edges of the bandage and any other apparently weak points were strengthened with strips of benzoic wool.

On the whole, from the summer of 1877 up to January 23, excluding a number of slight injuries and trifling operations, thymol had been used in fifty-nine operations in Volkmann's clinic with the most excellent results. In the first forty-one cases the secretion was serous in only eight, and purulent in two. In the remainder there was absolutely no secretion—that is to say, when the bandage was removed, the skin of the protected parts was found completely dry, and not a drop of liquid could be squeezed out of the layers of gauze. This first series of thymol dressing includes cases of amputation of the mamma, of the arm, of the foot by Chopart and Pirogoff's operations, three amputations of the leg, four excisions of the elbow, two radical operations for hernia, and seven radical operations for the cure of hydrocele by excision. The sixteen severe operations treated with thymol during January of the present year include, *inter alia*, a gunshot wound of the knee-joint treated by drainage of the joint, a secondary amputation of the thigh, an incision of the hip, and also one of the knee-joint for scrofulous caries, and an excision of the shoulder in an old case of dislocation of the humerus complicated with fracture, in all of which the results obtained were equal to those of the first series. Lastly, we should mention the successful termination of three ovariectomies performed by Professor Olshausen, and treated throughout on antiseptic principles by means of thymol dressings.

To sum up Dr. Ranke's observations on the use of thymol, we may say that

nearly all the major operations of surgery have been treated by him successfully by the thymol modification of Lister's method; and although at present the introduction of thymol offers no hope of any relaxation of the minute attention to details which a successful carrying out of this method invariably necessitates, yet since the secretion of wounds treated by thymol is much less, and their rate of healing much quicker, than when carbolic acid is used, thymol deserves the preference over the latter, the results obtained with it (antiseptically considered) being, to say the least, equally good. An additional advantage of thymol over carbolic acid consists in its innocuous effects on the system at large, and in its non-irritant action on parts to which it is locally applied. Thus, on the one hand, permanent antiseptic irrigations with thymol solution (1 per 1000), which cannot be carried out with carbolic acid for any length of time, have been repeatedly and successfully used in Professor Volkmann's clinic; and, on the other, the redness of the skin, vesication, and eczema produced by carbolic acid dressings have entirely disappeared on the substitution of thymol for it.

At present one kilogramme of thymol costs, in the German market, sixty marks (53s), whereas carbolic acid costs a little more than three shillings per kilogramme, so that, at first sight, the expense of thymol dressing appears to be very great. It, however, as Dr. Ranke clearly shows, we take into account the reduction in the number of bandages rendered possible by the use of thymol, owing to the extremely small amount of secretion induced by the new antiseptic, the difference in price is much more than compensated for. Thus, to give a single example of the superiority of thymol, we may mention the fact that two cases of diffused ganglion of the palm, treated by incision, only required two changes of bandage instead of eight or ten, as they would under the ordinary Lister's treatment.

The internal use of thymol in various diseases has at present scarcely answered to the expectations which were formed of it. Experimented with on a large scale by Coghlen, of Cracow, it only relieved the symptoms in a case of chronic gastric catarrh accompanied with fermentation; whereas, in a number of cases of acute and chronic gastric and intestinal catarrh, in intermittent fever, chronic cystitis, typhoid fever, pneumonia, pulmonary phthisis, and chronic bronchitis, it completely failed. As an antipyretic, in doses of two to four grammes (Baelz), its action is also far inferior to that of salicylic acid; hence, for the present, at any rate, it is for its valuable antiseptic properties that thymol deserves to be attentively studied; and there can be no doubt that Dr. Ranke's experience offers every encouragement to antiseptic surgeons to introduce it largely into their practice.—*Med. Times and Gaz.*, March 2, 1878.

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On the Mydriatic Properties of Duboisia Myoporoides, with an Account of its General Physiological Action.

MR. JOHN TWEEDY, Clinical Assistant at the Royal London Ophthalmic Hospital, and DR. SYDNEY RINGER, Professor of Therapeutics at University College, London, have recently studied (*Lancet*, March 2, 1878) the physiological properties of duboisia, which belongs to the group of salpiglossideæ, and occupies a position intermediate between solanaceæ and scrophulariaceæ. Now, however, it is definitely referred to solanaceæ, notwithstanding its (duboisia's) didynamous stamens. It is indigenous in New South Wales, Queensland, and New Caledonia.

Its botanical relations naturally suggested that its alkaloid is probably similar, if not identical, with atropia. These investigations confirm this surmise. Thus it is found that, like atropia, duboisia dilates the pupil, dries the mouth, arrests the secretion of the skin, produces headache and drowsiness. It also antagonizes the effect of muscarin on the heart, and after some days excites tetanus in frogs.

Its action on the pupil is more prompt and energetic than atropia, and certainly very much more so than the strongest extract of belladonna. In order to determine more clearly the rate and amount of its action upon the accommodation, Mr. Tweedy determined to use his own eye, and gives the following account of his experiment: "I first carefully tested the state of vision, and found that I could read No. 1 $\frac{1}{2}$ of Snellen's type distinctly from 4 in. (nearest point) to 21 in. (furthest point) and $V=29$. I then placed a single drop of a solution of the extract (1 in 20) within the lids of the tested eye. A little lachrymation followed, but no smarting. Exactly ten minutes afterwards the pupil began to dilate, and the sight became rather misty for near objects. When once started, dilatation proceeded very rapidly, so that fifteen minutes after instillation the pupil was widely dilated, and the nearest point had receded to 10 in. In twenty-five minutes 1 $\frac{1}{2}$ Snellen could not be read at any distance by the unaided eye, and the accommodation was therefore, for all practical purposes, completely paralyzed. By more elaborate tests I discovered that the effect of the extract went on increasing for four hours, when it attained its maximum. Twenty-four hours afterwards there was no appreciable amelioration, either in the pupil or in the accommodation, but within the next twenty-four hours the effects began to pass rapidly off, so that forty-eight hours after the instillation I could see 1 $\frac{1}{2}$ Snellen from 5 $\frac{1}{2}$ in. to 21 in., although the pupil was not much smaller. In seventy-two hours, by an effort of accommodation, 1 $\frac{1}{2}$ Snellen could be seen at 4 $\frac{1}{2}$ in., and the pupil was rather smaller, and reacted slightly to light. From this time the accommodation became stronger and more active every hour, and the pupil gradually diminished until it reached its natural size. Four days after the application the accommodation was restored, and three days later the pupil was active, and of its normal size.

"I could not at any time detect any change in the actual or relative strength of the extra-ocular muscles.

"Experience having shown that the application of the extract was not likely to be harmful to the eye, I resolved to employ it in all cases in which atropine was indicated. I have therefore used it largely in injuries and diseases of the cornea, in iritis, in spasm of accommodation, and whenever it has been necessary to paralyze the accommodation. Its action has in all instances been beneficial, and in some cases I have been tempted to believe superior to that of atropia."

The Action of Diuretics.

According to GRÜTZNER (*Pflüger's Archiv*, xi., 370) there are two distinct modes by which the secretion of the kidney can be increased medicinally—(1) by raising the pressure in the arterial system generally, *e. g.*, by digitalis or strychnia; and (2) by directly influencing the secreting tissues of the organ, *e. g.*, by urea or nitrate of soda. If the blood-pressure in the arteries be lowered in rabbits or dogs by dividing the cervical portion of the spinal cord, and so destroying the controlling effect of the vaso-motor centre in the medulla oblongata, the urinary secretion almost completely ceases. If, however, urea or nitrate of soda be injected into the veins, there is a slight rise in the blood-pressure, and the kidneys recommence secreting under a pressure far below that at which they ordinarily secrete. The above drugs have the same effect if the blood-pressure is lowered by large doses of chloral hydrate or curare. This action of urea and nitrate of soda on the renal secretion appears to be of a "specific" character, and to be in some way connected with the function of the Malpighian tufts. It can be prevented by stimulating the medulla oblongata by electricity or by carbonic acid poisoning, and so raising the blood-pressure throughout the body; for this induces vaso-motor nerve spasm, contraction of the renal arterioles, lowered

blood-pressure in the glomeruli, and arrest of the renal secretion, in spite of the presence of these diuretics in the blood—the proof that the glomeruli are involved being this, that previous section of the vaso-motor nerves of one kidney is followed by abundant secretion of urine when the blood-pressure is raised, while the other kidney scarcely secretes at all. It further appears from Grützner's experiments that digitalis and strychnia exert a peculiar influence on the renal arterioles, leading to vascular spasm and arrest of the urinary secretion, which does not depend on the vaso-motor action of the medulla oblongata, since it occurs indifferently whether the vaso-motor nerves of the kidney are divided or intact. That the effect is due to intra-renal vascular spasm is shown by the abundant diuresis which occurs at a later stage when the spasm has ceased, but the general arterial pressure continues high.—*Med. Times and Gaz.*, March 2, 1878.

Diuretic Properties of the Hydrobromate and Citrate of Caffeine.

At the meeting of the Paris Société de Thérapie on November 27, Professor GUBLER spoke on the diuretic properties of hydrobromate of caffeine (*Bulletin Général de Thérapie*, December 15). After having cited some test cases, he quoted one of a man suffering from an organic disease of the heart, whose liver was on the way to undergo the cirrhotic degeneration which precedes what is called nutmeg-liver. As a consequence of this affection, œdema of the lower limbs and abdomen was diagnosed. Digitalis had very little effect. M. Gubler then gave an hypodermic injection of fifty centigrammes of hydrobromate of caffeine. Diuresis set in after the second day, and gradually reached four litres and a half. When the injections were discontinued, the urine diminished gradually to a smaller quantity than the normal amount; the œdema, which had almost completely disappeared during the time of the diuresis, again appeared. Making a fresh injection, M. Gubler obtained the same result. It is important to note that with caffeine diuresis is abundant and almost instantaneous, while with digitalis the increase of urine only comes on on the second or third day. The caffeine, also, either citrate or hydrobromate, may be introduced under the skin without exercising any irritant action on the subcutaneous cellular tissue. M. FÉRÉOL mentioned the case of a patient who, suffering from a heart disease, had reached the last stage of cachexia. M. Gubler, who was called in consultation, prescribed an injection of morphia, and a draught with thirty centigrammes of caffeine. The next week, the urine amounted to one litre and a half, but the improvement did not last long, on account of the concomitant lesions of the kidneys. Death occurred two days afterwards. M. Gubler remarked in reference to this case, that the diuresis was always seen to diminish gradually, on account of the habituations of the organism to the physiological action of the drug. Account must also be taken of the reserve of liquid to be eliminated. Thus, for instance, digitalis has been given in cases in which there was no œdema nor infiltration (pneumonia); diuresis was not then observed. In a word, the diuretic effects are in proportion to the quantity of liquid accumulated.—*London Med. Record*, Jan. 15, 1878.

Quininetum and its Therapeutical Value.

The name quininetum was given by Dr. De Vry to the collective alkaloids obtained from Peruvian Bark by a very simple process. Dr. H. J. VINKHUYSEN, Physician to the Household of the King of the Netherlands, states (*The Practitioner*, Feb. 1877) that he has prescribed it in a hundred different cases, and from his observations he draws the following conclusions:—

1. The only malarious disease in which quininetum cannot be employed in place

of quinine is pernicious fever. Quinetum requires more time to act than quinine, and as rapidity of action is absolutely necessary in this disease, quinetum cannot be used in it as a substitute for quinine.

2. In all forms of pure malarial intermittent fever, quinetum has the same apyretic effect as quinine, but is less powerful, and acts more slowly. It must therefore be given in large doses and at longer intervals before the ague fit, than quinine.

3. Quinetum does not produce the unpleasant and even dangerous symptoms of quinine when given during the fit, and may be taken during the fit without causing any unpleasant feeling.

4. Quinetum never causes noises in the air.

5. Persons who are liable to suffer from the toxic effects of quinine, and who therefore cannot take it without the greatest discomfort, can take quinetum without this unpleasant effect, and yet obtain a similar therapeutical result.

6. The influence of quinetum in chronic cases is greater than that of quinine.

7. The tonic action of quinetum is similar and perhaps even greater than that of quinine.

8. The action of quinetum in cases of masked or larval malaria, and especially in rheumatic affections due to malarious influences, is incomparably greater than that of quinine.

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On the Therapeutic Uses of Sulphate of Copper.

In the *Commentario Clinico di Pisa* for September, 1877, Drs. G. LEVI and D. BARDUZZI publish experimental and clinical researches on some little known therapeutic applications of sulphate of copper. In both man and animals the results which they have obtained are so uniform as to merit serious consideration.

The animals on which experiments were made were horses, asses, and dogs; the dose at first was 15 centigrammes ($2\frac{1}{4}$ grains), increased to one or two grammes (15 or 30 grains) on the second day, according to the tolerance of the subject; the result was always an increase of strength and flesh. At the necropsies, traces of the metal were found in the blood and in the liver, especially the latter. They also gave copper on a large scale to patients in the Pisa Hospital; especially those affected with skin-disease, and those in whom the processes of assimilation were impaired. Individuals affected with erythema, ecthyma, herpes zoster, eczema, scrofula, pellagra, and tuberculosis, were treated with sulphate of copper in doses of 3 to 7 centigrammes (about half a grain to a grain) daily, the dose being gradually increased, in order more readily to insure tolerance of the remedy. The results corresponded with those obtained by experiments on animals. The patients bore the medicine well; the eruptions were favourably modified; the nutrition was improved; the strength and weight increased; the mucous membranes assumed an improved colour; and in some cases menstruation was re-established. The authors observe that it clearly follows from these facts that sulphate of copper, administered in a proper dose, is not only tolerated by the stomach and intestines, but gives a great impulse to the activity of the nutritive processes. They arrive at the following conclusions:—

1. Sulphate of copper, given to animals in doses gradually increased from three-fourths of a grain to 15 grains, is easily borne; and in general this dose, far from producing disturbances, improves the state of nutrition.

2. Sulphate of copper powerfully modifies the nutritive functions, by virtue of the greater activity which it induces in the internal processes of tissue-change; and hence it is indicated in all states of the organism in which there is deficiency or atony of nutrition and impoverishment of the blood. In the treatment of such

maladies, as well as of the functional disturbances which arise from them, notable benefit may be derived from its use.

3. The best method of administering sulphate of copper is in pill, at the commencement of or during meals.—*London Med. Record*, Jan. 15, 1878.

Excretion of Alcohol by the Kidneys and Lungs.

Prof. BINZ, of Bonn, with the assistance of Herrn H. Henbach and A. Schmidt (*Archiv f. Exper. Pathologie*, vi., 287), has lately re-examined this question, using Grissler's vaporimeter for the detection of small quantities of alcohol in the urine, instead of the ordinary chromic acid or iodine reaction, and the same method for the pulmonary vapour, the latter being previously condensed by passing the breath through a series of Woll's bottles containing cold distilled water, or through a Liebig's condenser. With the vaporimeter as little as 0.05 per cent. of alcohol can be detected, though certain precautions, fully described in the original, are necessary for its accurate use. Admitting all possible errors, experiments on the urine of six patients with various febrile affections (erysipelas, pneumonia, phthisis, etc.) showed that during a period of eight or nine hours after a given dose of alcohol had been taken, not more than 3.1 per cent., or at the highest computation 6 per cent., escaped by the kidneys, while in some determinations no alcohol at all could be discovered in the urine. With regard to the excretion by the lungs, it was found that if from thirty to sixty cubic centimetres of pure alcohol were drunk diluted with syrup, and the patient's breath were condensed continuously for one or two hours, and the product examined either immediately after the ingestion of the alcohol, or at any time within six hours, not a trace of alcohol could be found in it. Even assuming that the alcohol ingested required fifteen hours for the whole of it to evaporate by the lungs, the vaporimeter method was delicate enough to detect the fraction of it which would have escaped during the progress of the experiment. The idea that alcohol is present in the breath after wine or spirits have been drunk depends on the odour imparted by the presence of various ethers, fusel oil, etc., and not of alcohol. A quantity of pure diluted alcohol, equal in volume to half a bottle of champagne, may be drunk without tainting the breath in the least; and alcohol may be subcutaneously injected with the same result, though it is immediately detected if a little fusel oil is added to it first. Reasoning from analogy, Professor Binz and his assistants regard it as improbable that the skin should eliminate alcohol, if the lungs, which are so much better constructed for excreting it, do not do so. They conclude, therefore, that by far the larger part of any ingested alcohol is disposed of within the organism in the processes of tissue-change; and, if we remember rightly, this is the conclusion to which the late Dr. Anstie was also led by his own experiments.—*Med. Times and Gaz.*, Feb. 9, 1878.

MEDICINE.

Melana Neonatorum.

In a paper read at the recent meeting of German Naturalists and Physicians in Munich (*Central-Zeitung für Kinderheilkunde*, November 15) Dr. LEDERER, of Vienna, expressed his regret that the melana of new-born infants was scarcely mentioned in modern text-books on diseases of children.

He had treated eight cases, of which five were fatal from violent gastric and

intestinal hemorrhage, together with bleeding from the umbilicus. The patients were all boys, the youngest sixteen hours and the oldest fourteen days old; they were all mature and well developed; five were strong and well nourished, while three were tender and feeble; four had hemorrhage from both stomach and bowels; three from the bowels alone, and one from the stomach alone. In the cases which recovered, the discharge was arrested within twenty-four hours, the gastric hemorrhage always ceasing before the intestinal. A relapse occurred in one case only at the end of twenty-four hours. In none of the children did a disposition to hemorrhage remain, but in nearly all there was a tendency to intestinal catarrh.

Dr. Lederer regards the etiology of melæna neonatorum as not yet settled. He believes that the disease is not always the result of embolism, but that it depends on various causes, as it varies from single clots in the stools to violent hemorrhage. As a predisposing cause, he refers to the occurrence, in most of his cases, of hemorrhage from some organ in the father or mother. With regard to the treatment, he directs special attention to the fact that in all his cases the children were fed with breast-milk by the mother or nurse. In the severe cases, iced compresses were applied to the abdomen. The internal treatment consisted in the use of solution of sesquichloride of iron, nitrate of bismuth, and tannate of quinine. The emaciation, anæmia, and debility were treated in all cases by suckling alone, without any medicines.—*London Med. Record*, Dec. 15, 1877.

Ascites from Syphilitic Hydræmia.

Dr. CARLO DAL MONTI relates, in the *Giornale Italiano delle Malattie Veneree e della Pelle* (1877) a case of ascites, the cause of which was for a long time supposed to be oligæmia, since a careful examination of the viscera excluded every other morbid process. His suspicions being excited by the appearance of a scar over the right elbow, Dr. Dal Monti decided on giving a course of mercury. Under this treatment there was a marked improvement in a few days, and in two months the patient, on whom paracentesis had been performed three times, was quite well. In confirmation of the diagnosis, the patient confessed that some years previously he had had an infective sore on his external genital organs.—*London Med. Record*, Feb. 15, 1878.

On the Use of Ozonic Ether and Lard in Scarlatina.

Dr. JOHN DAY has used, in a considerable number of scarlatinal cases, a solution of peroxide of hydrogen in ether, mixed with lard in the proportion of one of the former to eight of the latter. He has also used, when throat affections were at all severe, a gargle consisting of two drachms of the ethereal solution of peroxide of hydrogen to eight ounces of water. He alleges, regarding his plan of treatment—first, that the peroxide, being a powerful oxidizer, and therefore disinfectant, in a concentrated form, destroys the poison-germs before they are thrown off from the body, so that the patient “is enabled to breathe a pure atmosphere, instead of, as under ordinary circumstances, an atmosphere contaminated by the poisonous emanations from his own body;” secondly, that, in consequence of the rapidity with which the scarlatinal poison is destroyed, desquamation of the cuticle seldom occurs; thirdly, that it places in the hands of the practitioner a positive means of arresting the spreading of the disease.

The notes of fifty-five cases treated on this plan by Dr. Day between April, 1873, and April, 1875, were laid before the Council of the City of Melbourne, as the Local Board of Health, when they were ordered to be printed, and copies forwarded to the several Local Boards of Health in the colony. The notes show that fifty-three of these cases recovered; but the result was not mentioned in two

cases, and we can, therefore, only speak as to fifty-three. This of itself, although good *prima facie* evidence of its utility, as no other treatment was adopted, is not sufficient, as it is well known that the disease prevails in a very mild character for lengthened periods, and then assumes, for a longer or shorter time, a malignant form. That the cases were very mild, is rendered probable by the comparative rarity of sore-throat. The most important part of the evidence is the extreme rarity with which other children living in the same houses became affected with the disease; indeed, with the exception of two instances in which the inoculation was imperfectly carried out, it was confined to the person first affected. Instances are mentioned of children being attacked in the one school where there were ten boarders and twenty-five day-scholars, in another where there were six other boarders and about sixty day-scholars, without any infection of the other children. The exceptions almost prove as much, because in one case the inoculations were continued for five days only, and four other children became infected a few days after they were left off; and, in another, two servants had a slight attack, and did not use the peroxide, when two children and an adult contracted the disease.

These statements are such as to render a trial of the plan advisable, not only for the sake of the patients, but of the public. There is no doubt that peroxide of hydrogen is a very unstable compound, which readily parts with one atom of its oxygen, and also liberates with some degree of violence the oxygen in the oxides of certain metals, and thus reduces them to a metallic state. The ethereal solution has a certain amount of stability, owing to the affinity of ether for the peroxide; but nevertheless we are not prepared to admit all the powers and virtues claimed for it by Dr. Day. He has also, as he believes, extended its usefulness to the prevention of pyæmia, erysipelas, and puerperal fever, in hospital practice, by having the walls painted and the floors coated with paraffin, and then polished with turpentine; thus preventing the use of soap, an alkaline compound, for cleaning the floors and walls.—*British Med. Journ.*, Dec. 8, 1877.

On the Treatment of Erysipelas by Silicate of Soda.

This method has been employed specially by Dr. ALVARENGA, of Lisbon, who credits it with great efficacy. His paper (an extract of which is given in the *Journal Méd. Chirurg. de Pesth*) is based on 48 cases of erysipelas of the scalp, face, and limbs, both fixed and erratic. He asserts that, with the help of this remedy, the disease does not last more than four or five days. The solution of silicate of soda used is the same which is employed in the manufacture of immovable apparatus. It is diluted with seven or eight times its weight of distilled water. It is very important to make a preliminary essay of this preparation with litmus paper: so long as it is acid, soda should be added to neutralize it. The solution must be spread over the affected parts, morning and night, with a pencil, and the surfaces must be allowed to dry in the air. At the end of four or five days, when the fever, oedema, and redness, have subsided, the use of the silicate of soda is suspended, and the parts affected are covered up with cotton-wool steeped in oil of sweet almonds.—*London Med. Record*, Jan. 15, 1878.

New Symptom of Paralysis Agitans.

M. DEBOVE communicated to the Hospital Medical Society (Jan. 25, 1878) a symptom of paralysis agitans which he has never seen mentioned. A patient affected with this disease is unable to read. At first it was thought that this resulted from the trembling of the hands, but it was found that it existed if the book was placed on a table. The patient could read a single line; then, after a

rest, he commenced on the following line, but suddenly recurred to the preceding one. M. Debove considers this ocular phenomenon analogous to the trouble in walking, to propulsion and retropulsion, and proposes to give to it the name of latero-pulsion.—*Gaz. Hebdom.*, Feb. 8, 1878.

Lesions of the Anterior Nerve-Roots in Diphtheritic Paralysis.

Dr. J. DÉJÉRINE describes (*Gazette Médicale*, No. 33, 1877) the result of the *post-mortem* examination of three children who died of diphtheritic paralysis affecting the pharynx. In one, almost all the muscles of the body had been paralyzed; in the other two, the muscles of the neck and inferior limbs were affected. The anterior nerve-roots were examined, after lying for twenty-four hours in a one-per-cent. solution of perosmic acid. In the case in which the paralysis had been most extensive, the author found in most of the nerve-fibres indications of advanced parenchymatous neuritis (degeneration). The axis-cylinders had disappeared, the medullary substance was split up or even replaced by drops of myelin, the nuclei of the neurilemma and of the interstitial connective tissue had undergone proliferation. Similar changes were observed in the peripheral nerves connected with the muscles; the muscles themselves appeared to be quite unaffected. Similar but less marked changes were found in the two cases in which the paralysis was neither so extensive as in the first, nor had lasted so long during life. The change in the nerves resembled that which they undergo when deprived through any cause of the influence of their trophic centres; and the author thinks it probable that the change in the peripheral nerves is dependent on an intramedullary lesion. The examination of the spinal cord is reserved for a future occasion.—*London Med. Record*, Feb. 15, 1878.

Pathology of Tetanus and Hydrophobia.

Dr. JOSEPH COATS, at a late meeting of the Royal Medical and Chirurgical Society (*Lancet*, Dec. 15, 1877), read a paper on this subject, of which the following is an abstract. The paper first described the lesions met with. In tetanus the central nervous system shows hyperæmia and certain appearances in the neighbourhood of the bloodvessels. In the cord and medulla oblongata, pons, corpora quadrigemina, and corpus striatum, but chiefly in the two first named, there is a granular material around the vessels, probably an exudation. In the medulla oblongata it is noted that a longitudinal vessel in the posterior parts is particularly affected, and that here, as well as in other parts, there are occasional hemorrhages. In the convolutions there is an exudation of a yellow fluid outside the smallest vessels, the medium-sized ones (which are those affected in the cord and medulla oblongata) having mostly escaped. In hydrophobia there is, in the central nervous system, an aggregation of leucocytes around the bloodvessels. In the cord, medulla oblongata, pons, and corpora quadrigemina, it is the medium-sized vessels which are so affected; in the convolutions it is those of small or capillary size. The salivary glands are infiltrated with leucocytes, which have special relations with the bloodvessels. The mucous glands of the larynx are similarly affected, though much less intensely. The kidneys are hyperæmic, with aggregation of white blood-corpuscles within them. The pathology of these two diseases is then discussed, and it is pointed out that there is a great similarity in the distribution of the lesions in the central nervous system, as well as a certain analogy in the kind of lesion. The special distribution of the lesion is compared to the localization of the tubercles in tubercular meningitis, and is ascribed to physiological and anatomical peculiarities of the circulation. Attention is also drawn to the fact that in hydrophobia the lesions are not confined to the central

nervous system, while in tetanus facts are deficient in this regard, but a parenchymatous affection of the liver, kidney, etc., is asserted by one author. The special localization of the symptoms, in both diseases, in the tongue, throat, and neck, is associated with the special prevalence of the lesions in the medulla oblongata, and especially in the neighbourhood of the nuclei of the nerves, in the floor of the fourth ventricle, etc., it being pointed out that the principal nutrient vessel of the medulla is especially related to these nuclei of gray matter. It is concluded that in tetanus and hydrophobia we seem to have two different poisons, each of which, circulating in the blood, attacks the central nervous system. These agents irritate the nervous system, but as they are different in nature, so the kind of irritation they produce is different. There is, however, a remarkable similarity in the localities indicated by them, and these seem to be specially the spinal cord, medulla oblongata, and corpora quadrigemina; and, to a lesser degree, the cerebral convolutions. The irritation seems to centre in the medulla oblongata, and in a particular region of it, this localization being probably determined by the anatomical and physiological relations of the nutrient vessels. The high temperature met with in hydrophobia, and sometimes in tetanus, is regarded as not inconsistent with these views.

Carbolate of Soda in Whooping-cough.

M. PERNOT (*Lyon Médicale*, Sept. 23, 1877) considers that he has discovered a specific for this troublesome affection in "plénate de soude," and gives details of cases in which, after other means had completely failed, he was able, by the use of it, to effect a complete cure in from ten to fourteen days. He places about 40 grammes of the crude salt in a porcelain capsule, and heats it over a spirit lamp so as to disengage carbolic vapours, the child being kept in the vapour a short time at first, and a longer time as he becomes more accustomed to it. In the most rebellious cases he has not required to use the treatment more than three times a day, and in most cases it has only been necessary to use it night and morning. He discusses the mode of preparation of carbolic acid and its salts, and ascribes the curative properties of the phenate of soda to the tarry compounds which it contains. "My observations," he says, "are now numerous; they, for the most part, resemble each other, and, speaking generally, we may sum up the results in the following words: 1st. There is a notable diminution in the number of 'kinks' after two to ten days' treatment. 2d. The respiration is less painful, less anxious. 3d. The 'kinks' are of shorter duration. 4th. There is less vomiting, possibly because the 'kinks' are shorter. 5th. Finally, the most stubborn cases, if I may so express myself, cease to advance from the commencement of the treatment, then diminish in intensity, little by little, and afterwards more rapidly."—*Glasgow Med. Journal*, Jan. 1878.

Treatment of Syphilitic Laryngitis.

M. H. DURET (*L'Année Médicale*, No. 10, 1877), in the course of a review of M. Isambert's work on syphilitic laryngitis, suggests the following methods of treatment. The general treatment should consist in protiodide of mercury in pills ($\frac{1}{4}$ to $\frac{1}{2}$ grain three times a day), or bichloride in solution. Should the affection have passed the secondary stage, iodide of potassium may be employed, or in stubborn cases, the "mixed treatment." Tonics, iron, quinine, etc., are usually called for. The patient should carefully avoid catching cold, and should avoid the use of tobacco and alcoholic liquors. Complete repose on the part of the organ itself is absolutely essential. The local treatment is of great importance. In the early stages, when there is only congestion or superficial ulceration, it

should consist of insufflations of powdered tannin, alum, nitrate of silver, or, better still, spray of carbolic acid solution, or solutions of alum, acetic acid, sulphate of zinc, etc. When the laryngoscope shows ulceration, the local treatment should be more precise and energetic. Cauterization at the seat of ulceration may be practised, by means of a small sponge moistened with tincture of iodine, solution of nitrate of silver, or of sulphate of copper, 1 to 30; of alum, 2 to 30; of sulphate of zinc, 1 to 100. These substances are preferably to be dissolved in pure glycerine. The crayon of nitrate of silver or sulphate of copper may also be employed. Experience has shown that excessive inflammation and oedema of the glottis are not to be feared with this treatment. M. Isambert has obtained excellent results in obstinate cases by the use of chromic acid (1 to 8 and 1 to 5), which modifies the pathological tissues advantageously. When necrosis of the cartilages sets in, a practised surgeon may sometimes succeed in preventing extension of the injury by cauterizing the diseased points by means of the galvanic cautery. Dr. V. Masson, in his thesis (Paris, 1875), has given the indications for tracheotomy with great exactitude. The surgeon may be called upon to perform this operation on account of asphyxia from oedema of the glottis, gummy tumour, or vegetations obliterating the air-passages, abscess, inflammatory swelling, or obstruction by loosened portions of necrosed cartilage.

When asphyxia comes on progressively, Isambert recommends cauterizations by chromic acid (1 to 3), thus crisping the swollen tissues, giving access to the air, and sometimes influencing the disease favourably at the same time. He reports two cases cured in this way. The patient must, however, be carefully watched, and if relief be not gained it will be necessary to operate. When the progress of asphyxia is sudden, tracheotomy is to be performed at once, even when the patient is *in extremis*. M. Trélat reports seventy-six recoveries in one hundred cases of tracheotomy, in oedema of the glottis from syphilitic laryngitis.—*London Med. Record*, Feb. 15, 1878.

The Treatment of Asthma.

Prof. GERMAIN SEE, whose recent enthusiastic praises of salicylic acid in rheumatism and gout were received with some scepticism by the Académie de Médecine, has just read to that learned body a paper, in which he speaks (*Bulletin de l'Académie*, January 29) in scarcely less warm tones of the efficacy of iodide of potassium and the iodide of ethyl in the treatment of asthma. After adverting to the few occasions on which *iodide of potassium* has been hitherto used, he observes that his own employment of this substance has not been for the mere relief of the paroxysm, for which it obtained some success in the hands of Trousseau, but as a means of effecting the cure of the disease itself, preventing the development and return of the paroxysms which constitute the attack that may last for a longer or shorter time. He began his investigations with it in 1869, after having convinced himself that the medicinal substances which had hitherto proved most useful in asthma, as the bromide of potassium, and especially chloral, only exert a very temporary and doubtful effect. Since then he has met with fifty cases, and he has been able to keep twenty-four of these under prolonged observation, never for less than half a year, and in some of the cases for three or four years. He dissolves ten grammes of the iodide in 200 of wine or water, and gives before each meal, twice a day, a dessertspoonful (eight or nine grammes), so that the patient takes daily sixteen or eighteen grammes of the solution, or one gramme eighty cent. of the iodide daily. After some days this quantity is gradually doubled. The same doses may in preference be taken in syrup or orange-peel. If the patient becomes disgusted with the taste he may take the iodide in wafers. There is no definitive time for the duration of the

treatment, but generally at the end of two or three weeks, when the attacks are attenuated or abolished, the dose may be diminished to a gramme and a half per diem. From time to time the treatment may be interrupted for a day, but a longer interruption may be followed by a return of the accident. In one case a patient who had been cured for a year, having suppressed the iodide for four days, was again attacked. Any accompanying cough may be relieved by the addition of a little extract of opium or syrup of poppies, while, when there is not much cough or catarrh, two or three grammes of chloral given in the evening assist in diminishing the dyspnoea.

The effects of the iodide on the asthma and its paroxysms are—1. The respiration becomes free in about two hours; and when it has been administered some hours before the paroxysm the development of this is almost certainly prevented. The second paroxysm is suppressed with certainty. 2. The respiratory murmur can be heard in regions wherein it was suppressed. 3. Recent emphysema disappears, with the exaggerated sonority dependent upon it. 4. The râles cease to be sibilant, and become mucous, allowing of the penetration of air. 5. At the end of some hours the orthopnoea and emphysema have given place to normal respiration, intermingled or not with disseminated mucous râles. 6. When the asthma is chronic with permanent emphysema, if the treatment be continued after the subsidence of the attack, not only do the paroxysms totally cease, but the emphysema and oppression habitual to the asthmatic entirely disappear, especially in dry asthma. In catarrhal asthma the catarrh may persist for a longer or shorter time after the dyspnoea has disappeared. 7. When the asthma is due to a valvular lesion of the heart, the effects produced are but slight; but when it is connected with degeneration or hypertrophy of the cardiac tissue itself, the iodide treatment leads to the disappearance of the dyspnoeic element. But before pronouncing on the existence of cardiac asthma, we should be aware of a fact that may easily give rise to error. This is, that in a great number of the subjects of asthma we may observe at the apex of the heart, and more rarely at the base, a very gentle but very evident systolic *bruit de soufflé*, which may lead to the fear of the existence of valvular lesion. But this sound, which seems to reside in the valves of the right side of the heart, entirely disappears, and that in some days, with the removal of the asthma by means of the iodide treatment.

As inconveniences of a prolonged employment of the iodide, may be mentioned—1. Oozing of blood from the mouth and fauces. 2. Hæmoptysis. This occurs only in those predisposed to tubercle; and in all such subjects, and even when the diagnosis is doubtful, the iodide must be proscribed. 3. Loss of appetite and disgust at food. For this it suffices to suspend the treatment for a day from time to time, and to diminish the dose during a week. 4. Emaciation. This is not a contraindication, for at a later period the patients may recover their flesh. 5. Iodine cachexia and diffidence of the blood have never been met with even after prolonged treatment. The general result is, that a cure takes place in almost all cases, even when the patients are placed amid atmospheric conditions which are habitually injurious (thus, a bakeress, who always had paroxysms of asthma excited by inhaling flour, was by the use of the iodide enabled to continue her occupation). The patients also resist far better the changes of temperature, the influence of heat and cold, the action of the wind and of dusts. No precaution has to be taken as regards hygiene and regimen, and the use of coffee and tobacco has not seemed to be injurious.

The Iodide of Ethyl.—Prof. Sée has employed inhalations of this substance in five cases of asthma, and the paroxysm was arrested in all very readily. In three cases of cardiac dyspnoea it also acted favourably, and in two cases of chronic bronchitis accompanied by dyspnoea the effect, although much less prompt, was

advantageous. Quite recently, in a case of cedematous laryngitis, inhalations repeated ten or twelve times a day effected a cure. Like the iodide of potassium, the iodide of ethyl increases the bronchial secretion, and by this hypersecretion renders it more fluid, and thus favours the admission of air into the pulmonary alveoli. The iodine stimulates the action of the respiratory centre, and, by reason of the greater quantity of blood this is brought into contact with, respiration becomes more easy, being still further aided by the ether in combination with the iodine.

The general conclusions to be drawn from the paper are—1. Iodide of potassium constitutes the most certain means of curing asthma, whatever its origin may be. 2. The iodide of ethyl relieves the paroxysms of asthmatic dyspnoea with great rapidity. It also appears to act advantageously in cardiac and even in laryngeal dyspnoea.—*Med. Times and Gaz.*, Feb. 9, 1878.

Use of Pure Creasote in Pulmonary Phthisis.

In the *Gazette Hebdomadaire*, Nos. 31 and 33, 1877, MM. BOURCHARD and GIMBERT give the result of their observations on the effects of creasote in phthisis. They used a very pure preparation, free from carbolic acid, of specific gravity 1066, having a strong smell of tar, forming a clear solution with collodion, soluble in diluted alcohol, and, when treated with chloride of iron, yielding a green colour, which soon passed into brown. The following formulæ are specially recommended:—

Pure creasote, 13.5 parts; tincture of gentian, 30 parts; alcohol, 250 parts; Malaga wine sufficient to make up a thousand parts: of this, from two to five tablespoonfuls are taken in water daily.

Or a mixture is made of 2 parts of pure creasote with 150 of cod-liver oil.

The daily dose of creasote varied between 40 and 60 centigrammes (6 to 9 grains; in rare cases as much as 80 centigrammes to a gramme (12 to 15 grains) were used.

In this way the authors treated 93 patients in various stages of phthisis. Of these, 25 were "apparently" cured, 29 were improved, 18 remained no better, and 21 died. The term "apparent recovery" is applied by the authors to cases in which the cough and expectoration ceased, the fever disappeared, the weight increased, and the physical signs changed so as to indicate cicatrization. By "improvement" they denote a condition in which the cough and expectoration were permanently lessened, the body-weight increased, and the physical signs indicated an arrest, or a diminution of the process of destruction.

Of the 93 patients, 25 (27 per cent.), were apparently cured, viz., 5 in the first and 20 in the second stage of the disease. Of the 29 (31 per cent.) patients who were improved, 3 were in the first, 21 in the second, and 5 in the last stage. Of the 21 (23 per cent.) who died, 12 were in the second, and 9 in the third stage. Creasote thus exercised an unmistakably favourable influence on 54 cases out of 92. This influence consisted chiefly in diminution of the expectoration, cough, and fever, while the appetite, strength, and weight were increased. In most cases the night-sweats disappeared under the use of the remedy. Some days before the diminution of the expectoration and cough, an improvement can be detected in the physical signs, especially those which depend on the presence of fluid in the bronchi and in the cavities; later, the symptoms indicating induration of the pulmonary tissue disappear or are improved. The latter action sometimes takes place, the authors say, with almost incredible rapidity. The authors cannot say, as they have not yet had an opportunity of making a *post-mortem* examination, whether the favourable action of the remedy lies in obsolescence (calcification) of tubercle.

The chief benefit of this treatment appears due to the limitation of the bronchial secretion; and this leads in the end to diminution of the cough, which at first generally increases under the use of creasote. If the cough remain obstinate or become worse, the further use of the medicine must be stopped. The creasote treatment is especially beneficial in cases attended with expectoration of purulent or fetid matter. As regards hæmoptysis, it seems that creasote does not act as a curative, but only as a palliative, rendering the attacks of hemorrhage less frequent. The reduction of the fever is to be ascribed to the improvement in the local affections of the lung. Creasote appears to have no influence on the diarrhoea of phthisical patients; on the other hand, it improves the appetite, and is efficacious against the frequent vomiting to which the patients are subject. The authors, in summing up, conclude that creasote is indicated in phthisis generally, except in florid phthisis. The contraindications to its use are, intolerance on the part of the stomach, and increase of the cough and dyspnoea in certain asthenic forms of the disease.—*London Med. Record*, Feb. 15, 1878.

The Diagnosis of Extra-Pericardial Adhesions.

Two papers have recently appeared which add a little to our knowledge on this head, which hitherto has been scanty enough. For long it has been known that systolic retraction of the præcordia is by no means a trustworthy sign of these adhesions, the sign having been present when no adhesions were found after death, and the converse has been equally common. Dr. O. von WIDMANN, writing in the July number of Virchow's *Archiv*, suggests that the essential factor for the production of systolic retraction is a change in the position of the heart, with or without adhesions. During systole, the heart's right-to-left diameter undergoes shortening, so that, if by any means the organ were so displaced that its normally lateral surfaces become antero-posterior, during systole a shortening would take place which would permit the atmospheric pressure to exert its influence on the chest wall, and cause a depression over the cardiac area. Still more lately, Dr. RIEGEL, in the *Berliner Klin. Wochenschrift* for November 5th, draws attention to a sign which he thinks of importance in the diagnosis of the actual pressure of adhesions; this is a diminution of the heart's impulse during respiration. Normally, the heart's apex-beat is felt more forcibly and reveals itself more decidedly on a cardiogram during respiration than inspiration; the converse condition, which Riegel has observed in several cases of pericardial adhesion to the border of the lung, is explained, he thinks, by the inability of the latter organ to come forward during inspiration, while in respiration they retract full upon the pericardium, and so impede the heart.—*British Med. Journ.*, Dec. 29, 1877.

On the Treatment of Serous Effusions by Limitation of Fluid in the Food.

Dr. W. B. CHEADLE, Physician to the Hospital for Sick Children, reports (*Lancet*, Dec. 15, 1877), the results of an investigation which he made on the limitation of fluid as an aid to the treatment of serous effusions. His experience has been too limited to furnish any complete and final proof of the exact value of the treatment adopted. But one or two results come out very clearly, and are sufficiently striking and important to merit further examination—viz. :—

1. The fact that, in cases of serous effusion at any rate, if the fluid taken into the body as drink be limited to a small quantity, an amount of fluid can be drawn out of the body by the stomach and bowels greatly in excess of that thus put into it at the time.
2. That, although the excess of fluid thus drawn off may be obtained, to some

extent, at the expense of the other secretions or the blood, the simultaneous subsidence of the dropsical accumulations, and the absence of any other sufficient source of supply, show that it must have been chiefly derived from the latter.

3. The proportion of outflow by urine to inflow by drink, or the gain in drainage by the kidneys, was always greater when the fluid taken in as drink was reduced below twenty ounces: and more than this, *that the gain in drainage was in inverse proportion to the fluid swallowed.*

4. The greatest drainage—i.e., the greatest excess of outflow over inflow—was attained in each case under the administration of digitalis.

5. The reduction in the gross outflow of urine was always less in proportion than the reduction of inflow by drink, with which it corresponded; and, conversely, the increase of urine was always less than the corresponding increase of inflow by drink. The latter result may, however, have been effected by the previous privation. While it appears, therefore, that in these cases the drainage by the kidneys was generally effective in inverse proportion to the quantity of drink swallowed, and that under the influence of digitalis a greater excess of outflow by urine over inflow by drink was obtained when the latter was limited to from five to sixteen ounces than when twenty to thirty ounces were taken, it does not necessarily follow that the same rule would hold good if larger quantities of fluid still were taken. It is possible that the additional quantity taken in may be more than compensated by increased outflow under the action of purgatives and diuretics. The enormous discharge of urine in the first case under the influence of digitalis, for two days before the drink was limited, would at first sight seem to support this view. But although, owing to the amount of drink not being measured, the means of accurate comparison are wanting, if we take the lowest average of 30 oz. = 849 cc. as the quantity of drink, it will be seen that the excess of inflow over outflow was 451 cc. and 195 cc., or an average of 1100 cc., as compared with 2157 and 1357, or an average of 1757 cc. for the two days next following, when the fluid was limited to sixteen ounces. The presumption furnished by the evidence in these cases, and especially by the record of the last, during the period when drink was unlimited, is against the view that the diuresis would be increased in proportion to the increased supply of fluid—that is, “water is the best diuretic.” But experiments as to the effect of diuretics, and especially of digitalis, together with a free and large supply of drink, are necessary to clear up the point satisfactorily.

It is remarkable that the suffering from thirst should have been so slight. The restriction to drink caused no serious distress in any case, and the discomfort experienced was relieved and fully compensated for by a few acid drops, except in the fourth and fifth cases, in one of which there was advanced renal disease, and in the other much fever.

It is further worthy of note that the limitation of drink did not produce any great diminution of the gross quantity of urine in the case of renal disease, nor any symptoms which would forbid the adoption of such treatment on occasion in similar cases. It would be desirable to ascertain the effect of the restriction on the excretion of urea.

Finally, then, limitation of drink may fairly be used as an adjunct to treatment in cases of passive dropsy, or inflammatory effusion when the acute stage is over. In acute cases, accompanied by much thirst and fever, such restriction would probably be ill borne. In serious renal disease I should hesitate to adopt it, except with much caution and constant estimation of its effect upon the gross excretion of urea.

On Visceral Syphilis.

In the *Bulletin de l'Académie de Médecine*, No. 43, October, 1877, is a report of a communication made to the Academy by M. LANCEREAUX, entitled "Note of a Case of Pulmonary Syphilis, with remarks upon visceral syphilis, and the errors of which it is the object." M. Lancereaux writes:—

Forty years ago no one believed in visceral syphilis. Studied with timidity at first, then with more confidence, it has gained, little by little, till, at the present day, some physicians seem to think it amongst the most frequent of morbid conditions. *Post hoc, ergo propter hoc* would seem to be the motto of many; but this is far from scientific, and many disorders are now attributed to syphilis which do not belong to it, just as new medicaments are vaunted above measure, and applied to all cases alike, only to return directly to the obscurity whence they emerged. So the knowledge which has been gained of visceral syphilis is in danger of falling into discredit. This is a serious thing, for if ignorance is calamitous, the loss of acquired facts is still more so.

The recognition of the manifestations of tertiary syphilis ought not to rest upon any simple coincidence of conditions, but upon special, and, so to speak, fundamental characters. These are furnished by the lesions, which are the indelible signs of the malady. Armed with this criterion, the physician follows a road in which there is no risk of wandering. Such is at least my conviction after long and patient research, not only into the pathology of syphilis, but also into most of the chief pathological processes.

First of all, then, taking a simple case, I shall endeavour to prove, by the comparison of this with other facts, that syphilis, even when hidden in the depths of the organism, can be as surely tracked out by clinical analysis as a body forming part of some mixture can be isolated by chemical analysis.

A man aged 58, an hospital attendant in the employ of the "Assistance Publique," had, with the exception of pains in the head, been in good health till November, 1876, when he was seized with dizziness, vomiting, and uncontrollable hiccough. To these symptoms and violent headache, a slight degree of muscular paralysis on the right side was soon added. He denied all history of venereal disease; but, as he was known to be a drunkard, and yet denied this, his repudiation of venereal disease was not to be depended upon. Under the influence of iodide of potassium and a seton at the back of the neck, he improved much; and there only remained slight weakness of the right arm and leg, and a slight deviation of the mouth. He went on well for four or five months, and then again suffered from vomiting and hiccough for some days. Then vision became indistinct in the right eye; he had a little cough and shortness of breath on exertion. He kept up his nutrition notwithstanding. The sight of the right eye became entirely lost, and then that of the left eye became affected; he had difficulty in walking, and ultimately was seized with a quiet delirium, soon accompanied by the loss of his intellectual faculties, and a semi-comatose state. The pupils were unequal. He became violently delirious, and then died.

Necropsy.—The skin was free from cicatrices; the skull thick and sclerosed; the dura mater was intact, but the other membranes, normal at the base, were slightly thick, and white at the convexity of the cerebral hemispheres. The Pacchionian corpuscles were thick, and hypertrophied. Placed upon its base, the brain divided into two halves, and allowed one to see between the lateral ventricles a yellow membranous mass, from three to five centimetres in extent, which occupied the place of the septum lucidum, now no longer in existence. The optic chiasma was injected, softened, and inflamed, as well as the tissue of the nerves at their origin. The optic papillæ were œdematous and injected. The rest of the brain

was healthy. The lungs were closely adherent in their lower third, both to the thoracic wall and to the diaphragm; and they were cleft with deep fissures, like the syphilitic cicatrices found in the liver, and, like these, also filled by newly formed fibrous tissue. Between these clefts the parenchyma was, in some parts, indurated, in others, emphysematous. The visceral pleura was elsewhere thickened. The disease was symmetrical, but a little more advanced on the right side than the left. The substance of both lungs presented similar lesions—viz., increased toughness of the lower lobes, well-defined gummata, of the size of hazelnuts, surrounded by a zone of grayish fibroid tissue, and tracts of whitish or blackish fibrous tissue, which, for the most part, radiated from a common centre. The bronchial tubes were dilated, and the glands voluminous and firm.

The other viscera showed nothing abnormal, save that the heart was fatty, and one kidney had a deep depression on its surface. The testes were fibrous, and the tunicae vaginales adherent.

A microscopical examination of the lungs showed that the whitish fibrous tracts were composed of a fibrillated connective tissue, like cicatrices. The gummata presented two distinct parts—the one central, unaffected by staining fluids, composed of degenerate elements grouped round bloodvessels, the walls of which were notably thickened, and the channels almost completely obstructed; the other peripheral, staining deeply, composed of small round cells, like embryonic connective tissue, some fusiform cells, and vessels with flattened epithelioid lining, thickened walls, but still patent lumen.

This examination seems to show that gummata commences as a periarteritis, which extends in successive circular layers, till at last the internal tunic is invaded, the canal obstructed, and the central part degenerates. At the same time, the neighbouring lung-tissue becomes compressed. Notwithstanding the want of evidence of syphilitic antecedents, M. Lancereaux considers that either the testes or the lungs in this case would supply indisputable and conclusive evidence of the existence of syphilis. The points on which stress are laid are, that syphilis produces material lesions, which are neither diffuse nor extensive, but always circumscribed and limited; and that its mode of development is quite peculiar. Thus insanity, general paralysis, progressive locomotor ataxy, and pulmonary phthisis—all of them maladies characterized by the very opposite of these features—are absolutely independent of syphilis. With a syphilitic patient, attacked with functional disorders of some important viscus, the brain, for example, the diagnosis will rest upon the following points: Is there in the case a material lesion? If not, syphilis is not its cause. If there be, then is the lesion diffused or circumscribed? and in the last case only can the possibility of syphilis be admitted.—*London Med. Record*, Dec. 15, 1877.

On Syphilitic Disease of the Kidneys and Heart.

Dr. AXEL KEY relates in the *Hygiea*, 1877 (abstract in *Nordiskt Medicin. Arkiv*, Band ix. Heft 3), two cases of syphiloma of the kidneys, and one of syphilitic disease of the kidneys and heart.

The subject of the first case was a prostitute, who died suddenly. At the necropsy, besides other characteristic specific changes, one-half of each kidney was found to be the seat of between twenty and thirty grayish-white or reddish-gray round masses of various sizes, some isolated, some becoming confluent. They were surrounded by a gelatinous gray-white zone, and sharply defined from the surrounding renal tissue, so far as could be seen with the naked eye. The condition could not be judged with certainty, as cadaveric changes had already commenced. Most of the larger masses had undergone caseous degeneration in the centre. Microscopic examination showed the changes usual in syphiloma, espe-

cially syphiloma of the liver, which the masses found in the kidney also resembled microscopically.

In the second case, that of a man aged 31, the syphilitic deposits were very numerous, and were principally found in the pyramids of the kidneys. (In the former case the new growths were partly within and partly without the cortex and pyramids.) They were softer than in the other case, and were in general in a state of softening, having a jelly-like consistence. In addition to the syphiloma, the renal tissue was the seat of induration and atrophy.

In connection with these cases, Dr. Key describes the condition of the heart and kidneys as found by Professor Bruzelius at the necropsy of a sailor who had died suddenly. The lower part of each kidney was found to be completely atrophied; and to be sharply marked off from the upper part, which microscopically appeared to be unaltered. This atrophy is characteristic of syphilis. The muscular tissue of the heart also contained many connective tissue-growths, in which were found small grayish-white or gray-yellow syphilitic deposits.—*London Med. Record*, Dec. 15, 1877.

Milk-diet in the Treatment of Nephritis.

Dr. H. MACRIEWICZ shows in the *Thèse de Paris* (June 1877), by cases reported from Dr. Lancereaux's wards, the good effects obtained by milk-diet in Bright's disease, and how this regimen should be initiated. Asses' milk should be used in preference; where that cannot be obtained, cows' milk, after it has stood for twelve hours and been carefully skimmed. It may be drunk either hot, cold, or lukewarm, as the patient likes. On the first day of the milk regimen, two litres (about 3½ pints), with some food, should be given. The milk should be drunk by the glass, and in small mouthfuls. The whole quantity must be divided into four parts, each taken at different times at equal intervals throughout the day. The next day three litres must be given, and no other food; and on the following days the quantity must be augmented by one litre, until from four to six litres have been disposed of, according to the tolerance of the patient. If milk have not been tolerated, Vichy water, lime-water, calcined magnesia, or some alcoholic or acid liquid may be added to it. From one to two and a half drachms of chloride of sodium may also be added to it with advantage. If the patient be anemic, some of the preparations of iron and quinine may be safely employed. If at the end of a week the dropsy be not diminished, and the flow of urine increased, the milk-diet must be given up, and recourse had to other means, such as purgatives and sudorifices; diuretics have no effect. This inefficacy is always a guide as to the gravity of the affection and its incurability. The treatment should be continued so long as it is tolerated, until the dropsy, and, if possible, the albuminuria have disappeared. The disappearance of the latter sometimes only occurs five or six months after the most rigid observance of the milk-diet. When the albuminuria has disappeared, a mixed diet should be gradually adopted, until no more milk is given. The reappearance of the albuminuria or the dropsy, where the albuminuria has not been improved, will always be an indication to resume the absolute milk-regimen, which must also be resumed on the appearance of uræmic accidents. Finally, it must be remembered that, as the milk-diet is nearly always successful where all medication has failed, it is a duty, when any kind of nephritis is met with, to begin by a rigid milk-diet, and only to have recourse to other therapeutic means when success is not attained by the one under consideration.—*London Med. Record*, Jan. 15, 1878.

Cerebral Commotion as a Cause of Transient Glycosuria.

At the meeting of the Société de Biologie in Paris on December 1, 1877, M. ALBERT ROBIN, in support of the new theory advocated by M. Duret on cerebral commotion as a cause of passing glycosuria, reported a typical case. A young man, aged 19, having fallen from the seat of a carriage, was taken to the Beaujon Hospital. There were ecchymoses of the head, and he remained unconscious for many hours. As there was retention of urine, M. Robin performed catheterization, and found that there was a notable quantity of sugar in the urine. A short time afterwards a second examination gave no traces of sugar. This is therefore a perfectly authentic case of temporary glycosuria, consecutive on cerebral commotion. M. Claude Bernard observed that this could be produced experimentally in animals.—*London Med. Record*, Feb. 15, 1878.

Lesion of the Pancreas in Certain Forms of Diabetes.

At a recent meeting of the Paris Academy of Medicine, M. LANCEREAUX showed some pathological specimens of lesion of the pancreas in patients who had died of diabetes, and gave the history of the cases. He said that the cases and the specimens showed that diabetes mellitus is, at least in some cases, accompanied by a serious change in the pancreas. A similar change has been met with in many other cases of diabetes; and in these cases, as in those noted by M. Lancereaux, the disease, of which the course has been comparatively rapid, has shown itself by excessive appetite and thirst, great emaciation, profuse glycosmia—in a word, by all the characteristics of diuretic wasting. On the other hand, animals, the pancreas of which is extirpated or destroyed, become voracious, are rapidly emaciated, and succumb very quickly. Taking, therefore, into consideration the special characters of diabetes in cases of disease of the pancreas, and the phenomena in animals following the destruction of this organ, M. Lancereaux thinks it may fairly be concluded that there exists a causal relation between serious changes in the pancreas and the diabetes mellitus in question. This form of diabetes is distinguished by the comparatively sudden appearance of emaciation, with polydipsia and excessive appetite, and peculiar characteristics of the alvine excreta. The prognosis of this form of diabetes is very unfavourable. The indications of treatment consist in prohibiting the use of articles of food which are digested by the pancreatic juice, and nourishing the patient with the class of food which is digested in the stomach.—*British Med. Journal*, Jan. 5, 1878, from *La France Médicale*, Nov. 17.

Use of Nitric Acid in Diabetes Insipidus.

Mr. HENRY KENNEDY recommends (*Practitioner*, Feb. 1878) the use of nitric acid in the treatment of diabetes insipidus. He records five cases cured by it, in two of them one drachm of the dilute acid was administered in a quart of water daily, and in the remaining three the doses respectively were two, four, and five drachms in the day, with successful result.

Symptoms and Treatment of Psoriasis Universalis.

KAPOSI remarks (*Wiener Medizin. Wochenschrift*, Nos. 44 and 45, 1877) that the constitutional disturbance present in some cases of universal psoriasis may threaten life; and that patients cured of this aggravated form of the disease may in subsequent attacks have only the more usual localized psoriasis.

The three methods employed by Hebra in universal psoriasis to soften the epidermic incrustations, namely, the application of cod-liver oil, the continual bath,

and the enveloping the body in impermeable materials, as India-rubber clothing, although very beneficial in most instances yet in exceptional cases act injuriously and even dangerously. Cod-liver oil may provoke eczema, in which case it must be discontinued at once, and dusting powder freely used. In one case it provoked a universal eruption of pustules and boils. Three days' use of the continual bath having failed to alleviate this condition, the application of diachylon ointment to the whole body was employed successfully. In another case in which cod-liver oil had produced very threatening symptoms by detaching the epidermis, the patient's life was only saved by his being immersed in water for fourteen days. When oils, fats, and water have failed, a cure has been effected by diachylon ointment and bandaging. Under the use of an India-rubber suit, in some cases very harmless and useful, the skin of the whole body may become swollen and congested to such a degree as to imperatively demand a cessation of the treatment. *Lond. Med. Record*, Jan. 15, 1878.

SURGERY.

Purichymatous Injections of Acetic Acid in Carcinoma.

Dr. TH. GIES relates (*Deutsche Zeitschrift für Chirurgie*, Band vii., and *Wiener Medizin. Wochenschrift*, No. 41, 1877) the case of a man aged 62, who had a glandular swelling under the horizontal ramus of the lower jaw. As a small nodule in the lower lip had been removed some years previously, the swelling was supposed to be carcinomatous; and this diagnosis was confirmed by microscopic examination after its extirpation.

Soon afterwards the patient felt a pain in the tongue, which was found to be due to a cancerous ulcer in the left half of the organ, near the epiglottis. This diseased portion was excised after ligature of the lingual artery and division of the lower jaw; and no return of the disease in the part took place during eighteen months.

Seven months after the last operation, two new tumours appeared; a smaller one near the left border on the lower jaw, and a larger one lower down on the neck. The latter disappeared under treatment with ice; the former remained stationary. A year after the tongue had been extirpated, a rapidly growing tumour appeared in the neighbourhood of the right submaxillary gland; it resisted treatment by ice, and soon pushed the trachea aside. Examination of a small piece of the tumour, removed by the harpoon, proved it to be carcinomatous.

The author then injected into the tumour, once every week, the contents of a Pravaz's syringe filled with a solution of one part of glacial acetic acid in three parts of water. On the first day, a solution of 1 part in 9 was used. On each occasion, the point of the syringe was moved about in the growth, so as to distribute the contents. Warm poultices were applied. Great swelling followed. On the tenth day he made a deep incision with a pointed knife, and inserted a drainage-tube, through which offensive ichorous matter escaped. After seventeen days this discharge ceased, and at the end of four months only a hard nodule as large as a hazel-nut could be felt, lying deeply in the tissue. Soon afterwards four injections were made into the tumour near the margin of the lower jaw, and into one which recently appeared in the left cheek, with a similar result. A new swelling now appeared below the left ear; it increased to the size of a hen's egg, was very hard, and microscopic examination showed it to have a more abundant

framework of connective tissue than the former tumours. Injections were again resorted to, but, considering the greater resistance of this growth, the author injected two or three syringefuls daily. During eleven days, twenty-five syringes filled with the solution of acetic acid (1 to 3) were injected. The injections in the soft growths were almost painless, while the injections into this tumour produced great pain. On the twelfth day an incision was made. The suppuration lasted three weeks, at the end of which time the tumour had almost disappeared.

A similar result was obtained by the author in the case of a woman who had a soft cancerous tumour in the breast. During ten days a syringeful was injected daily, and on the eleventh day an incision was made. After fifteen days the ichorous suppuration had ceased, and at the end of four weeks only a small painless tumour about the size of a hazel-nut remained in the depth of her breast.

In both these cases, the author made the injections for the purpose of producing suppuration. For that reason, he used concentrated solutions of acetic acid.

He recommends attention to this method, because it may be very useful in cases not amenable to operation, as a means of restraining the rapid growth of the neoplasm, and possibly of producing radical cure. The cases, however, are of too recent a date to enable a definite opinion to be formed.—*Lond. Med. Record*, Feb. 15, 1878.

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Arnica as a Remedy for Boils.

In the *Journal de Therapeutique* for Jan. 25, 1878, Dr. PLANAT writes that he has found arnica possessed of rapid and constant efficacy in cases of boils. He was led to try arnica in these cases from the result of physiological experiments made by him, with the view of studying the *modus operandi* of this substance on wounds. Its property of producing resolution, evidently due to its influence on the vaso-constrictor nerves, gave him the idea of applying it in all cases of acute superficial inflammation, such as boils, angina, erysipelas, etc. These experiments have convinced M. Planat that arnica arrests all furuncular eruptions with remarkable rapidity. M. Planat makes an exception in the cases of diabetic boils, which have not come under his observation, and of carbuncle, which, by reason of its exceptionally serious character, he has treated in the ordinary way. He has been equally successful in cases of erysipelas and acute simple angina, but is not quite so clear about this as of the case of boils. The arnica was applied directly to the inflamed parts in the form of an ointment, composed of 10 grammes of extract of fresh arnica flowers to 20 grammes of honey. If this mixture be too thin, lycopodium or althea powder, or any similar substance, may be added so as to give it the necessary consistence. It is spread on diachylon plaster or oiled silk, and applied to the boil. Generally it is sufficient to renew this dressing once in twenty-four hours. Two or three applications generally cause the boil to die away at all stages of its evolution.

Dr. Planat has also given internally in cases of this character tincture of arnica in doses of from 25 to 30 drops in a draught to be taken in teaspoonfuls every two hours, and has thereby obtained so rapid an extinction of the furuncular eruption that it seemed impossible to him to deny the special action of the drug. He, however, noted greater efficiency from its direct application.—*Lond. Med. Record*, Feb. 15, 1878.

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Foreign Bodies in the Oesophagus.

The following is the substance of a paper read by Prof. B. VON LANGENBECK to the Berlin Medical Society on "Foreign Bodies in the Oesophagus and Oesophagotomy." After indicating the usual places where foreign bodies are detained in the oesophagus, the Professor went on to say (*Berliner Klin. Woch.*, Dec. 17

and 24) that he had met with three cases in which voluminous bodies detained in the pharynx by compressing the epiglottis against the rima glottidis threatened to produce immediate suffocation. The first of these was produced in the lecturer's presence, by a boy playing with another at catching a small apple thrown into his mouth. After succeeding several times, he suddenly fell on the floor with widely-opened mouth and a blue-coloured face. Fortunately, it was found that the apple could be extracted by introducing the forefinger beside it. The second case occurred in the person of a very robust gentleman, who came to consult the lecturer concerning a hernia. Lying down on the sofa in order that it might be examined, he suddenly became lifeless and blue in the face. On the forefinger being introduced, a complete set of false teeth was withdrawn, the pulse and respiration, however, not returning until some seconds afterwards. Dieffenbach relates an entirely similar case. In the third instance, a lady, about to undergo amputation of the breast, exhibited at the very commencement of the administration of chloroform laboured stertorous breathing and a dark-blue colour of the face. The finger, introduced to draw the tongue forwards, detected and withdrew a set of false teeth. In other cases of this kind the patients do not always escape so easily; and it is very desirable that dentists should caution those to whom they supply teeth in order to prevent these accidents. Surgeons, too, before administering chloroform to elderly people, should ascertain with certainty the existence of false teeth, and insist upon their removal. In the removal of large foreign bodies the finger is the instrument to be resorted to before all others; and if they are too firmly fixed to be removed by it, then forceps or levers should be used. Tracheotomy is always too late in such cases. When, also, small-pointed foreign bodies—as needles, fish-bones, etc.—are detained in the pharynx, and especially in the sacculi formed by the ligamenta glosso-epiglottica, the finger should never be omitted to be introduced, in the hope of bringing the body into the mouth, or at all events to ascertain its exact position before employing the forceps.

When a foreign body of some size, as a large piece of meat, hard dumpling, potato, etc., passes through the pharynx, it not unfrequently becomes detained in the œsophagus opposite the cricoid cartilage, and by pressure on the larynx or trachea causes great difficulty of respiration. Its position is easily ascertained by the projection it causes on the left side of the throat, but its removal is often very troublesome owing to the spasmodic contraction of the œsophagus which takes place above and below the foreign body. Forcefully thrusting it down cannot be too strongly deprecated, as injury to the œsophagus cannot be avoided with certainty. A peasant applied to the lecturer for relief, having thirty hours before attempted to swallow a huge piece of sinewy meat, which, being retained, almost induced suffocation. Repeated attempts were made to remove the foreign body by means of a slightly curved, strong forceps, but it proved immovable, only some of the fleshy fibres coming away. Œsophagotomy was contemplated, as during the attempts at removal the difficulty of respiration was so greatly increased; but the projecting tumour having been seized by the fingers in the neck, raised from the larynx and compressed for some minutes, the respiration became much more free. The foreign body, although not moving from the spot, had assumed, through this manipulation, a more elongated form, and was removed by means of the forceps with some exertion of force. Another man applied on account of the obstruction to respiration and swallowing caused by a pretty large piece of tough meat which had for twenty-four hours obstructed the same part of the œsophagus. Violent retching, caused by tickling the fauces and attempts with the forceps to withdraw or thrust it down, failed to dislodge the body, which was placed as in a diverticulum of the left side of the œsophagus. The tumour

which it formed in the neck was then seized with the fingers and squeezed so powerfully that the body slid down into the stomach. Dupuytren dealt with a potato in the same way, which had resisted all attempts to withdraw it or force it into the stomach. When the position of the foreign body is not indicated by its projection in the neck, we must bear in mind that the indications furnished by the patients themselves are very deceptive. Oftentimes they are unable to denote its locality, and sometimes assign one that is far distant from the real one. Thus, a woman in whom a set of teeth was lodged opposite the cricoid indicated the cardia, and a man referred the obstruction caused by a piece of bone to the cervical portion of the œsophagus, when it really existed in the thoracic portion. Catheterism of the œsophagus may therefore be required to ascertain the situation of the body. The general and almost traditional practice of employing the probang, either for the withdrawal or for the thrusting down of the foreign body, cannot be too earnestly deprecated. A more irrational practice can scarcely be imagined, and no other instrument has done so much mischief in proportion to the number of cases in which it has been employed. By it we are able to ascertain neither the situation nor the condition of the foreign body; and, in place of its withdrawal or propulsion, it sometimes becomes only forced deeper into the œsophagus, and may even (as in two cases which the lecturer has met with) be thrust through the wall of the œsophagus into the mediastinum. When soft bodies obstruct the œsophagus, the forcing of which into the stomach is desirable, the probang may be used; but in all cases when the condition and position of these are unknown, or their extraction seems possible, catheterism must be first performed. For this purpose Prof. von Langenbeck uses a whalebone staff, to the lower end of which is attached a smooth polished iron ball. This, when well oiled, slides readily down the œsophagus by its own weight, is easily movable to and fro, and enables us to detect with certainty hard bodies, such as coins, needles, and pieces of bone. If the object is to force into the stomach a harmless substance, the nature of which is known, he employs an elastic œsophageal sound; this acts upon the foreign body as efficaciously as the probang, but slides down the œsophagus far more easily, and renders injury much less possible. Foreign bodies which may wound the œsophagus, or become dangerous in the intestinal canal—such as bone, fragments of glass, coins, needles, etc., should, in Prof. von Langenbeck's opinion, be always extracted, their extraction being a far more certain and less dangerous procedure than forcing them into the stomach. In a great number of such operations he has never met with any accident. The instrument which he exclusively employs for this purpose is Von Græfe's coin-extractor. This passes with facility, and without any injury, into the œsophagus beside the foreign body, and during its withdrawal seizes it with a certainty that leaves nothing to be desired. Prior to its introduction, some oil should be injected into the œsophagus, and then the end of the instrument should be guided by the left forefinger over the root of the tongue and epiglottis against the back of the pharynx, and thence into the tube. On withdrawing it very carefully, if the least resistance is encountered we must desist, and move it gently to and fro in order to disengage it from any possible entanglement in the mucous membrane. When the instrument with the foreign body has arrived opposite the cricoid cartilage, difficulty in completing the extraction is caused by the cartilage springing backwards; but this may be obviated by pressing the end of the instrument, which has now become visible, against the posterior wall of the pharynx. When the isthmus of the fauces has been reached, we should always, and especially with restless children, have the left forefinger in readiness, in order to seize hold of the foreign body, which might otherwise escape. A pair of firmly grasping pharyngeal forceps, and this coin-extractor, constitute all the apparatus required.

There is, however, one inconvenience attending the coin-extractor that must be noticed, viz., when the foreign body becomes so firmly wedged into the extractor that this cannot be loosened from it and withdrawn. Prof. Adelmann relates a case in which the extractor, thus embracing the foreign body, could not be removed during two days. In the case of a girl who had swallowed a shawl-pin, which occurred to the lecturer, its position at the lower end of the œsophagus having been detected by means of the sound armed with the iron knob, it was seized by the coin-extractor. So firmly, however, had it penetrated the œsophagus that it could not be withdrawn: and, after repeated efforts, when the attempt was abandoned, the instrument could not be separated from the pin until after half an hour, when the pin slipped into the stomach. Bloody stools followed, and the patient complained of great pain in the stomach for a month after the accident, but the pin has never been found.

Casting one's eye over the statistics, it would be concluded that the passage of foreign bodies into the œsophagus is a very dangerous occurrence; for of the 314 cases collected by Adelmann, 109 proved fatal. But the proportion of fatal cases is far less than this, for the great majority of cases, when the foreign body is easily extracted or passes into the stomach, are never published at all. In Prof. Langenbeck's thirty-four years' practice he has had a very great number of these cases, and has never met with a fatal occurrence. Pieces of money can always be removed, and some of the pieces of bone slip into the stomach as soon as they have been dislodged by the extractor: but the great majority of flat and pointed pieces of bone are removed. In the two fatal cases of perforation of the œsophagus related by Prof. Busch, the sponge-probang had been employed, and the foreign body could not be detected. However, from this statistic the conclusion is to be drawn that if the foreign bodies be not promptly removed, and if unsuitable and violent manipulations are employed, they may seriously endanger life. Above all things, it is important that the body be removed as soon as possible, and that the practitioner at once proceeds with decision.

When the removal cannot be accomplished, and the nature of the body does not admit of its being thrust into the stomach, when the cervical œsophagus is the part of the tube concerned, we should perform œsophagotomy. It is a comparatively rare operation, for, according to König, from the time of its first performance by Goursault in 1738 to 1872, it has only been executed twenty-six times for the removal of foreign bodies. Its indication has been generally believed only rarely to occur, while its danger and difficulty have been exaggerated; and an examination of recorded cases of foreign bodies in the œsophagus shows that it should have been performed much more frequently, and that, without doubt, many lives might have been saved by it. The twenty-six operations referred to by König, and two now related by the lecturer, were followed by twenty-three recoveries and five deaths, some of the latter being due to the too prolonged residence of the body; so that the operation must be regarded as one attended with very little danger. Almost all living surgeons agree that the mode of making the incisions recommended by Guattani is the best, the skin on the left side of the neck being divided from the middle of the thyroid cartilage to the anterior edge of the sterno-cleido-mastoid, and to about five centimetres above the manubrium sterni. After the superficial fascia has been divided, the sterno-cleido is drawn outwards and backwards by means of double hooks, and the common carotid then becomes visible through the middle cervical fascia. The fascia is to be divided in the direction of the long axis of the wound, and drawn outwards and backwards by means of strong hooks, the carotid being kept out of the operation-field. It

must not be forgotten that this artery lies more superficially than the œsophagus, and that the latter only becomes visible after the deep cervical fascia has been divided. This is done at the outer edge of the sterno-thyroid muscle, after having drawn the larynx by means of a hook to the right side. The muscle being now drawn towards the median line, the œsophagus becomes visible. Before opening it an œsophageal sound, made of gum-elastic or pliable metal, should be introduced for the purpose of projecting the œsophagus more to the left, and rendering its opening more easy and certain. The separation of the fascia in order to expose the œsophagus is best accomplished by raising it by means of two hook-forceps and dividing it between them, allowing the knife to act more by its pressure, thus avoiding injury to the inferior thyroid artery and inferior laryngeal nerve. Injury to the recurrent nerve is not much to be feared, as this passes upwards between the trachea and œsophagus, and is with the former organ drawn towards the right; it is only in question when a foreign body of large circumference thrusts the œsophagus far towards the left. The nearer an operation approaches important organs, the more must it assume the character of a delicate anatomical dissection; and in order to avoid injuring important vessels, it is highly desirable to separate the tissues as much as possible by means of the fingers or blunt instruments. When the foreign body does not project the œsophagus, and cannot be felt externally, the passage of an œsophageal sound by the mouth very much facilitates the operation. One circumstance may render access to the œsophagus exceedingly difficult, and is of the more importance, inasmuch as it is not noticed in any of the descriptions of the operation. This is the tumefaction of the thyroid gland. If a large foreign body be detained for several days opposite the cricoid cartilage, causing difficulty of respiration by pressure on the larynx, swelling of the thyroid due to a stasis of the blood in the veins is always present. The tumefied gland lies so much over the œsophagus that this may be entirely covered by it; and in order that the gland may be raised from the œsophagus its enveloping fascia must be divided.

Prof. v. Langenbeck terminates his communication by the narration of two cases in which he performed œsophagotomy with success for the removal of false teeth.—*Med. Times and Gaz.*, Jan. 26, 1878.

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Foreign Body in the Œsophagus, with Perforation of the Aorta.

Dr. ASCHENBORN relates the following case in the *Berliner Klinische Wochenschrift*, for December 10th. V., a joiner's apprentice, was admitted to the Bethany Hospital on July 1, 1876. That morning he felt severe pains during respiration, but had two days before begun to suffer from pains in the epigastric region and along the gullet after swallowing a hard morsel of bread. On admission, there were accelerated costal and shallow respiration, a full pulse of 100, a temperature of 39° C. (102.2° F.). The heart and lungs were normal. There was acute sensibility to pressure at the pit of the stomach and about the insertion of the diaphragm, but no difficulty of swallowing. During the next six days the pulse rose at times to 120, with febrile symptoms, and deglutition became extremely painful, except in the case of fluids. The respirations rose to 40 per minute, and were throughout costal and shallow, the area of cardiac dullness was extended. The neck swelled in the supraclavicular spaces, especially on the right side. On the 5th a longitudinal incision was made in the posterior wall of the pharynx, yielding an offensive sanious fluid of a dark colour, but no pus. After this, his general condition improved somewhat, but the swelling of the neck was not diminished. On the 7th, in the forenoon, two bloody stools were suddenly passed, his strength and general condition remaining unchanged for that

and the following day. During the night of the 8th-9th of July a copious stool of pure blood was passed, followed quickly by collapse. Under the use of port wine and camphor, the patient rallied somewhat during the day; but on the same evening, without any warning, immense hemorrhage occurred from the mouth, and he succumbed in a few minutes. The necropsy revealed a longitudinal rent of two fifths of an inch in the œsophagus, about four inches above the cardia, at right angles to which was found a needle about two inches long, piercing both walls of the descending aorta from before backwards. Both punctures were covered by small, firmly adherent blood-clots. The surrounding tissue, from the œsophageal to the posterior pharyngeal wall above, was infiltrated with sanguineous ichor. In the œsophagus were found large blood-clots, the stomach was completely filled with a large coagulum of blood, and the whole intestinal canal contained large masses of clotted blood.

The needle, which was swallowed with the bread, became fixed in the œsophagus, and caused the moderate pain of the first few days. By repeated acts of swallowing it was made to penetrate the aorta; hence the bleeding on the 7th. The clots then formed served for a couple of days to plug the punctures; but when they became decomposed under the influence of the food taken, there resulted further and fatal hemorrhage.—*London Med. Record*, Jan. 15, 1878.

On Surgical Treatment of Bronchocele.

At a meeting of the Vienna branch of the Niederösterreich Medical Society (*Allg. Wien. Med. Zeit.*, November 27), Hofrath Prof. BILLROTH detailed his experience in the operative treatment of bronchocele. The treatment by the local and general use of iodine, he observed, is sometimes effectual, but only when the individual is young and it is resorted to sufficiently early. It is now about ten years since the practice of injecting the tincture of iodide into parenchymatous bronchocele was introduced by Schwalbe, Lücke, and others, and it was soon found that the apprehended danger of the practice was groundless. In some individuals, however, violent reaction may occur, but in others not the slightest. Prof. Billroth injects first from one-third to one-half of a Pravaz syringe-ful of undiluted tincture of iodine, and, if this is well borne, in five or six days he makes a second injection of one-half or a whole syringe-ful, repeating this twice a week. If the patient becomes thin the treatment should be immediately stopped, as the emaciation may go on to an important degree. It should also be stopped if hæmoptysis appears. In general, the injections are well borne, and exert remarkable influence. They may be tried when suffocative symptoms have appeared, if the patient is kept under constant inspection; and even in cases about to be operated upon their employment has been followed by recovery. It is essential that the iodine be injected well into the substance of the bronchocele, which may be done rapidly, the pain at the most continuing for five or ten minutes, and requiring cold applications, while in many cases it is entirely absent.

For cystic bronchocele Prof. Billroth has operated fifty-two times. On two occasions he simply tapped it with a middle-sized trocar, and in both cases intense inflammation arose, rendering incision necessary in one, and extirpation in the other. He has abandoned the practice, but regards puncture for the purpose of diagnosis as harmless. Tincture of iodine, after the fluid has been allowed to discharge itself without squeezing the tumour, has been injected in thirty-four cases, with twenty-nine recoveries, half an ounce of that of the British Pharmacopœia (which is nearly twice as strong as that of the Austrian) having been thrown in. The patient is then sent to bed, and a pretty firm calico bandage smeared with collodion bound round the neck. This, in general, falls off on the third day, and at first great swelling and accumulation of gas occur, but when

these diminish during the first week there is no need of interference. The absorption sometimes takes place very slowly, occupying often a whole year. The walls of the cyst do not adhere together consequently upon reaction, as has been represented both with regard to bronchocele and hydrocele, but the lining membrane ceases to secrete in consequence of the deposition of iodine. Incision with drainage was successfully performed in two cases; and in twelve Chelius's operation of incision and connection of the walls of the cyst and the skin by sutures was resorted to, nine of the cases being cured and three patients dying. The painful procedure of cauterizing by chloride of zinc was once resorted to. In one case in which pure alcohol was injected, fearful acetic fermentation was set up, and the patient soon died in a septic condition. In two cases a diminution of the tumour was produced by puncturing with a medium-sized trocar: but in a third, suppurative inflammation was set up, which rendered incision necessary. Of thirty-seven cases in which extirpation was performed, twenty-four recovered; but in some of these other measures had been previously resorted to, which had induced suppuration. The arteries were immediately tied so as to often reduce the hemorrhage to a minimum. Allusion was made to Rose's observation of the diminution of the thickness of the cartilages by pressure, so that the trachea may become as thin as paper, and therefore easily compressible, which often leads to unexpected death after successful operations for bronchocele. Unfortunately it is in the worst cases that this operation fails to preserve life, as asphyxia often recurs, which may require tracheotomy, etc. In four or five cases in which this was resorted to early, the patients nevertheless all died. It is in this operation, as after opening large abscesses in the neck, or after tracheotomy in croup—the patient, after going on well for some time, finally dies in a hitherto unexplained manner with the symptoms of asphyxia.

The general result of Prof. Billroth's operative procedures in bronchocele is, that of ninety-four patients eighteen died, or about 19 per cent., which, he observes, cannot be regarded as a bad statistical proportion, if the dangers to which the subjects of the disease are exposed be considered.—*Med. Times and Gaz.*, Jan. 12, 1878.

— *Tracheotomy in Diphtheria.*

In an article in M. Langenbeck's *Archiv*, Bd. xxi., Dr. R. A. KRONLEIN gives some most valuable statistical data as to the value of tracheotomy in diphtheria, and as to other points connected with this disease, founded on the enormous number of 567 cases, which were admitted into Professor von Langenbeck's clinic at Berlin from January 1, 1870, to July 31, 1876.

Tracheotomy was performed 504 times, the sole indication for the operation being the presence of laryngeal stenosis, without reference to the patient's age or the other features of the disease. Of these, 357, or 70.8 per cent., died. Eighty-five operations were performed on children under two years, the youngest child being only seven months old, and of these eleven recovered.

Kronlein finds, from the statistics of 241 carefully recorded cases, in 210 of which tracheotomy was performed, that it is a bad prognostic sign if the breathing does not become perfectly free after the operation. Forty-two out of forty-six children, whom it thus failed to relieve, died. The cause of the failure is either the presence of lobular pneumonia or of croupous exudation extending far into the bronchi; but even if branching casts of the bronchi are expelled during the operation, and the respiration becomes apparently quite free, the prognosis is still unfavourable. Out of 210 children on whom tracheotomy was performed, 154 died; and of these deaths 100 were due to asphyxia, and the remainder either to a gradual loss of strength or to sudden collapse. Gradual loss of strength is

largely induced by disturbances of the mechanism of deglutition, which Dr. Krönlein divides into two classes.

By far the larger number of cases belong to the first, in which swallowing is impaired at a time when distinct diphtheritic exudation is still present in the larynx, the functions of the muscles being interfered with by diphtheritic infiltration and exudation into their substance.

In the cases in the second class deglutition is affected much later, after the local disease has completely healed, by secondary diphtheritic paralysis of the laryngeal and pharyngeal muscles.

Returning to the general statistics of the whole 567 cases included in the report, we may say that 377, or 66.4 per cent., ended fatally, but that, though the number of individual cases has increased year by year, the proportion of deaths has diminished instead of increasing. Season affects the prevalence of diphtheria at Berlin very decidedly, the largest number of cases occurring in October, and the smallest in June.

The period of life when diphtheria is most frequent is early childhood. The number of cases steadily rises from one month up to three years old, when the maximum frequency is reached; from that time until the end of the fourth year there is little variation, but in the fifth year the numbers gradually decline until the fifteenth or sixteenth year is reached, after which time cases become extremely rare. Out of the 567 cases in Krönlein's report only eight occurred between the ages of eighteen and forty-one years.

Various local remedies, which were tried with a view to arrest the spread of the diphtheritic exudation, all failed to give a satisfactory result.—*Med. Times and Gaz.*, Feb. 2, 1877.

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Laryngo-Tracheotomy for Large Multiple Papillomatous Growth in the Larynx; Removal of the Vocal Cords; Preservation of Voice; Coexistence of Thoracic Aneurism.

At the meeting of the Clinical Society of London held on February 22d (*Med. Times and Gaz.*, March 2, 1878), Dr. BURNEY YEO introduced the subject of the above operation. He was a labouring man, aged forty-nine, and who first came under his observation as an out-patient at the Brompton Hospital on October 13 last, complaining of severe and almost constant pain at the upper part of the left side of the chest. He was very hoarse, and had been so for eight or nine years. He suffered much from dyspnoea, and could not lie down in bed. Examination of the chest discovered a distinct pulsation at the sternal end of the second left intercostal space, with a corresponding area of dulness and strongly accentuated second cardiac sound. There was also a prolonged, noisy, harsh, and sometimes whistling inspiration heard all over the chest, without any moist râles. Laryngoscopic examination disclosed the existence in the larynx of a large vascular warty growth, apparently pedunculated, and attached to the anterior commissure above the vocal cords. It almost completely filled the upper part of the laryngeal cavity, concealing the glottis and the vocal cords entirely, except during breathing, when a triangular interval could be seen between the growth and the left vocal cord, through which air passed into the air-passages. On the 16th he was admitted into King's College Hospital, when, amongst other points in his history, he mentioned that, in June last, while helping to pick up an iron rail, he heard something crack, and was suddenly seized with severe pain in the superior cardiac region, from which he had ever since suffered. He was kept at rest in bed for a month, without any amelioration in his condition; indeed, the pain in the chest and the difficulty of breathing were so distressing that the patient begged for some operative interference. After consultation with Mr.

Lister, the operation which he immediately described to the members was performed on November 23.

Mr. LISTER then described the operation which he had performed. Cricotomy having shown that both vocal cords were implicated in the disease, he at once divided the thyroid cartilage, after introducing into the trachea one end of a bent leaden tube packed with thin sheet India-rubber, so as to plug the canal completely and prevent danger from blood entering the air-passages, chloroform being given at the other end of the tube. Both vocal cords were removed entire, together with neighbouring portions of mucous membrane, including the false vocal cords. The sides of the thyroid cartilage were drilled and tied together with silver wire, and the edges of the skin over the thyroid cartilage were kept in a state of relaxation by means of the button-stitch. The great peculiarity of the case consisted in the fact that the patient retained the power not only of coughing, but of speech of considerable power. In order to explain this, Mr. Lister referred to observations upon the movements of the larynx, which he had made in 1861, and published shortly in the article "Anæsthetics" in *Holmes's Surgery*. He had then ascertained by laryngoscopic examination in his own person, after an experiment on one of the lower animals, that the pulpy folds of mucous membrane which surmount the summits of arytenoid cartilages can be carried forward to the base of the epiglottis by an antero-posterior movement of the cartilages not generally known to occur, so as to act as a secure valve to the opening of the respiratory passage. It is the vibrations of these posterior parts of the aryteno-epiglottidean folds which constitute the mechanism of laryngeal stertor; and it is by their means that the exit of air is prevented during the accumulating pressure in an expiratory act which ends in coughing. Mr. Lister believed that it was still not generally known that the strain of the act of coughing is not borne by the delicate apparatus of the rima glottidis, but by these folds of mucous membrane which cannot suffer from such treatment. Knowing this fact, he had anticipated that the patient would be able to cough like other people; but he had not expected him to retain the power of speaking above a whisper. Yet he might have been prepared for the possibility of such an occurrence, seeing that laryngeal stertor can be produced at will, and by a mechanism which is independent of the vocal cords, and was left intact by the operation. Mr. Lister then himself uttered a sentence in a voice produced by the vibrations of the aryteno-epiglottidean folds; and he stated that, since his attention had been directed to the subject, he had noticed that this kind of voice is occasionally resorted to in ordinary parlance under the influence of mental emotion.

When the patient was introduced, the linear cicatrix over the box of the larynx having been exhibited, he showed that he could cough naturally, and also spoke some sentences in a deep, gruff monotone, plainly audible to all present.

The patient was then introduced; and Dr. Burney Yeo added, in completion of the history of the case, that inspection with the laryngoscope now showed an entire absence of the normal inter-laryngeal structures. In attempts at speech, the aryteno-epiglottic folds were drawn towards the median line, and served as vibrating media. He had been readmitted into the hospital a few weeks ago on account of the same neuralgic pains caused by his aortic aneurism, the physical signs of which had become more evident. He had been treated by rest in bed, hypodermic injections of morphia to procure rest at night, and iodide of potassium in doses of thirty grains three times a day. He had much improved under this treatment; he was now able to lie down comfortably in bed on either side. He had no dyspnoea and no cough. The expansile impulse and the area of dullness were less. Dr. Yeo thought the case of great interest, not only on account of the curious physiological fact it had revealed with respect to the production of voice,

but also from the remarkable coincidence of the existence of these large intra-laryngeal growths together with thoracic aneurism. In pre-laryngoscopic times it would have been difficult to have avoided the error of regarding the hoarseness and the obstruction to respiration observed in the case as consequences of aneurismal pressure. It was another instance, and a very remarkable one, of the clinical value of the laryngoscope.

Mr. HOLMES said that the case would have been more complete had any anatomical proof been given of the entire removal of the vocal cords, especially as in the ordinary operation of thyrotomy, for the removal of warty tumours from the larynx, no necessity was generally found for doing more than removing at most their surfaces. He also said that, in reference to the supposed power of the aryteno-epiglottidean folds to produce vocal sounds by their vibration, it would be interesting to know whether any laryngoscopist had ever observed such vibrations during the production of the hoarse voice which Mr. Lister imitated, or during any other kind of phonation. Mr. Lister's own experiments, of course, referred to a peculiar and forced position of the tongue, and to the production of a mere inarticulate sound.

Mr. LENNIX BROWNE said, that having had an opportunity of examining the patient, he could bear testimony to the fact that every portion of the vocal cords, true and false, had been removed. It appeared to him that in the act of phonation in this case there was general lateral compression of the larynx; there was certainly also a disposition for the epiglottis to hang lower than before the operation, so as to come in greater proximity to the arytenoid cartilages. The case was exceedingly interesting and important because the operation had been performed, not only on account of impairment of voice, but for relief of a vital symptom; and although there were dangers in the operation, they were in point of fact not so many nor so great as were frequently witnessed in attempts to remove growths *per vias naturales*. In this latter operation he had personally witnessed the following consequences: Spasm of the larynx, resulting from the introduction of instruments, in two instances requiring immediate tracheotomy; removal of normal tissue, leading to ulceration; injury to laryngeal cartilages, especially the arytenoid, resulting in paralysis, caries, and death of the patient. There was further a much greater tendency to recurrence than was generally supposed, and the recovery of voice was by no means so complete as was frequently thought to be the case by those who had not an opportunity of personally witnessing the results. Mr. Browne considered that the removal of the tracheal tube so very shortly after the operation in the present instance had contributed greatly to the patient's rapid recovery, while the very complete enucleation of the contents of the larynx would lead one to predict with almost certainty that there would be no recurrence; and he believed that were these two points, justly insisted on as important by Professor Lister, rigidly adhered to in similar cases, there would be no necessity for the much more dangerous operation of extirpation of the larynx.

Mr. LISTER, in replying, said that, with reference to Mr. Holmes's remarks, he must beg Mr. Holmes to take his word for the fact that both vocal cords were removed in their entire length and thickness, including the anterior processes of the arytenoid cartilages into which they are inserted; or, if that were not sufficient, he would appeal to Dr. Yeo, who was present at the operation. Mr. Wood also kindly assisted at the operation, and, if he had been at the meeting, he would have confirmed the accuracy of the statement.

Dr. BURNEY YEO, in replying, said there could be no doubt whatever that the whole of the strictly intra-laryngeal structures had been removed by the operation. He had had opportunities of demonstrating this fact laryngoscopically to several gentlemen present. The patient had not made so good an appearance

that evening as he had done on other occasions, being probably a little disturbed by coming before so large an assembly; but his voice had been tested in every way, and he was able to pronounce all the vowel sounds, and to read distinctly anything that was put before him.

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A Case of Total Extirpation of the Larynx; Death on the Fourth Day.

Dr. GERDES reports (*Archiv für Klin. Chir.*, Bd. xvi., Heft 2, 1877), a case of extirpation of the larynx in which the patient had suffered for many years from hoarseness, but only since May, 1876, from dysphagia and a slight interference with respiration. The laryngoscope showed that an irregular grayish-coloured infiltration occupied the right side of the larynx, extending from the vocal cord upward to the level of the edge of the thyroid cartilage; the left side of the larynx was free. Epiglottis normal. In spite of the absence of other characteristic appearances, the infiltration described gave the impression that it was of a malignant nature, and its removal was proposed to the patient, but refused. On the 10th of February following, dyspnoea and dysphagia had reached such a grade that tracheotomy was necessary; great difficulty was found in causing the tube to retain its proper position after introduction, and finally, after many attempts, lasting two to three weeks, it was removed permanently, and the wound allowed to close.

On the 28th of March, 1877, the patient was again seen; the tracheal wound had not entirely closed; the dyspnoea was excessive, and the laryngoscopic examination demonstrated a marked increase in the size of the growth—so much so, that more than one-half of the lumen of the trachea was occupied by it. The operator now determined to lay open the laryngeal cavity, assure himself as to the nature of the neoplasm, and then either remove it by the knife or sharp spoon, or, if it appeared advisable, to extirpate the larynx.

March 30th, the operation of extirpation was performed. The patient was placed in the position advised by Maas, Trendelenburg's canula being used, and the various steps of the operation being followed out as already described in other instances (a detailed account is given in the original article).

The degeneration of the extirpated larynx was even more extensive than was supposed from the laryngoscopic examination. The neoplasm occupied the entire right half of the larynx, extended thence to the left, and formed a large tumour below the vocal cords, altogether reducing the lumen of the larynx to a very narrow slit. The cartilages were in great part involved in the destructive process, presenting in many places the thickness alone of a thin paper, without, however, being perforated at any point. The microscope demonstrated epithelial cancer.

The patient did badly after the operation, and died on the morning of the 3d of August, of collapse (fourth day after the operation).—*New York Med. Journ.*, Feb. 1878.

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A Simple Plan of Emptying the Pleural Cavity.

Simplicity is a merit even in surgery, and hence the method of evacuating pleuritic effusions recommended by Dr. GURGESSON, of Riga (*Berlin. Klin. Woch.*, No. 48, 1877), deserves notice. He taps the chest with an ordinary canula and trocar, withdraws the latter, and slips over the end of the canula a caoutchouc tube three to six feet long, and of a suitable diameter, closed at the lower end with a clip or a small stopcock, and filled with a one to two per cent. solution of carbolic acid. The tap is then opened under the surface of a solution of carbolic acid in a large vessel placed at a lower level than the opening in the chest, so that the tube is converted into a siphon. A serous effusion of six to

eight pounds weight can be in this way evacuated in a quarter of an hour. If the stream stops from any cause, the tube can be alternately compressed and allowed to expand, so as to exert a pumping action on the fluid higher up. Where it is absolutely essential to prevent air entering the chest, Gigensohn recommends the trocar to be passed through the wall of the caoutchouc tube, into the upper end of which the canula is tied; the tube is then filled with carbolic solution from a funnel inserted into the raised lower end, so as to completely expel all air. The trocar is inserted with the canula into the chest, and withdrawn gradually until the necessary communication between the chest and the tube is established, and then completely withdrawn, and the tube slipped forward over the canula and tied, so as to close any opening left by the trocar. The fluid is then drawn off siphon-fashion as before. The author claims for his method the advantages of simplicity, of avoiding the continued presence of a sharp instrument in the chest during the operation; of being uniform in its action and easily regulated; and, lastly, of permitting the whole apparatus used to be cleansed and kept in order without the slightest trouble.—*Med. Times and Gaz.*, Dec. 22, 1877.

A Successful Case of Extirpation of the Spleen.

Dr. A. MARTIN, of Berlin, reports (*British Medical Journal*, Feb. 9, 1878) the case of a poor hunchback woman, thirty-one years of age, who applied to him on account of the severe pain which she suffered from a wandering spleen. Microscopical examination of the blood showed its constitution and the numerical relation of the red corpuscles to the white to be normal. The spleen was not enlarged; it could be felt per vaginam. The pains were constant and intense, continued even when the patient herself seemed unconscious from chloroform, and could not be diminished by drugs or other means.

On May 13th, 1877, the spleen was extirpated under the antiseptic method. Before the patient was placed on the table, the spleen was pressed into the median line. This being done, chloroform was given. The incision, which was in the median line, was about four inches in length, extending from the umbilicus downwards. The walls of the abdomen were extremely thin. Under the peritoneal opening, the omentum presented, but the spleen had disappeared; after some difficulty, it was found in its normal place. Dr. Martin was astonished to find how difficult it was to bring the organ out of this position and through the incision. The hilus was occupied by a group of vessels, which seemed to be quite separated from each other and to run free of all connections with neighbouring organs a distance of about four inches. The group next the lower surface of the organ contained one large artery. This he tied as firmly as possible with a silk ligature. Then he took the middle group, containing some arteries and the splenic vein, which was about the size of a thick goose quill. The ligature was carried around it in the same manner as in the case of the other vessels. While ligaturing the third group, the silk broke, wounding a small artery. In a moment, a hæmatoma was formed by the blood effused into the peritoneal layer around the vessels. He now tied the vessel further from the spleen, and stopped all bleeding completely. He next cut through the vessels and took away the spleen. Although the bleeding had ceased, he surrounded the vessels with a thick silk ligature, and fastened the whole once more. After this, there was no bleeding whatever. After cleaning off the diffused blood, he dropped the pedicle, which had commenced to swell most fearfully, back into the cavity. This being quite clean, he closed the abdominal walls and covered the wound with antiseptic dressing. Twenty-eight minutes after the operation was commenced, the patient awoke in her bed feeling quite comfortable.

The removed organ was only a little larger and heavier than normal; it was densely covered with star-like old and recent superficial cicatrices of perisplenic

inflammation. The parenchyma itself was not changed, nor was the blood the vessels contained pathologically changed.

The patient recovered without any febrile reaction. Being accustomed to the use of morphia, she received, during the first three days, several doses *per diem*. For the first day, she took only small pieces of ice. On the second day, the bowels began to act spontaneously; then she had beef-tea and wine. On the fifth day, she felt so well that, during the momentary absence of the nurse, she left her bed to look out of the window. On the fourth day, the bandages were changed under carbolic spray, the wound having healed almost completely *per primam intentionem*. On the ninth day, she felt so well that she could not be detained in bed any longer, and on the eleventh day she was sitting in the sunlight at the door of the clinic. The patient felt extremely well; the old pains, which Dr. Martin believed to be caused as well by the chronic inflammation as by the tension of the peritoneum by the organ, had disappeared, nor were any functions of the body disturbed. In different preparations, Dr. M. examined her blood microscopically, and sometimes in these examinations he was favoured with the kind assistance of Dr. Gravitz, of Virchow's Pathological Institution; but they found no alteration of the corpuscles, either in form or behaviour, nor in their relative number, nor was the fluid changed from its state previous to the operation. During the third week, the patient suffered serious indigestion from improper food. The menses were postponed six weeks, as has frequently occurred before; and the flow was not so profuse as during the former periods. Dr. M. was the more satisfied by the rapid recovery of the patient, for there thrombi were surely to be expected to form in the long splenic arteries, and he feared serious trouble therefrom. Nevertheless, no symptoms of any danger could be discovered, and three weeks after the operation the patient returned to her work, and at every opportunity hastened to show herself to those who had previously treated her.

Extirpation of Kidney.

The following case is reported by Professor KOCHER, of Bern, in the *Deutsche Zeitschrift für Chirurgie*, Band ix. Heft 3 and 4. A child, aged two years and a half, was brought to the author on July 10th, for treatment of an abdominal swelling which had commenced shortly after birth, and had subsequently increased slowly in size. The abdomen, when the child was first seen by Dr. Kocher, presented a very prominent tumour on the left side. The right side of the abdomen was lax and tympanic, the left side very resistant, and occupied by a well-marked growth, which extended upwards behind the margin of the ribs, whilst its inner margin, which was rounded, stretched from the umbilicus outwards and downwards to the middle of Poupart's ligament on the left side. No intestine could be felt in front of this tumour. The growth seemed to be spherical and very firm, and its surface was felt to be studded with cylindrical projections. It was freely movable upwards and downwards, and slightly so towards the median line. The urine was normal. Puncture of the swelling was attended with but a negative result, as the discharge consisted merely in some drops of blood. The case was diagnosed as one either of fetal tumour, of splenic tumour, or of a large new growth in the left kidney. On September 27th, after chloroform had been administered, the abdominal wall was incised, as in the operation of ovariotomy, from the apex of the ensiform process to a point midway between the umbilicus and the symphysis pubis. After the protrusion of a large mass of distended intestine, the tumour was exposed, the parietal layer of peritoneum in front of it being found much thickened, and traversed by very many large vessels. This peritoneal covering having been divided and carefully dissected from off the tumour, the whole mass was readily shelled out from the fatty and connective tissue in the

left lumbar region. The growth was then found to be connected with the left kidney, and was continuous with a short pedicle. This having been secured in a double catgut ligature, and then divided, the whole of the disease was readily removed. The peritoneal cavity having been carefully cleansed, the intestines were replaced, and the edges of the extensive wound brought together by twenty catgut sutures. The little patient rallied quickly from the immediate effects of the operation, but on the following morning was very feverish. On the evening of the second day there was collapse, and on the next day, after a slight attack of convulsions, the child died at 1 P. M. At the *post-mortem* examination, traces of slight peritonitis were found. There was no fluid effusion into the cavity of the peritoneum, but the coils of intestines were glued together and to the abdominal walls by sheets of soft fibrinous material. Professor Kocher attributes the fatal result to this peritonitis, and not to uræmic. There was compensatory hypertrophy of the right kidney, and the convulsions observed shortly before death were slight, and not characteristic of uræmic poisoning. The operation was performed under antiseptic conditions, and the wound was carefully covered by antiseptic dressings; but, during the process of enucleating the tumour, the large mass of protruded intestine was not, the author thinks, sufficiently protected from atmospheric influences.

The tumour, which weighed 1405 grammes (about three pounds), was examined by Professor Langhans. It was found to be inclosed in a tough capsule, and had evidently started from the centre of the kidney, as its superficial portion presented a thin streak of renal tissue, which was in direct contact with the capsule. The proper structure of the tumour was soft, of a reddish-gray colour, and infiltrated with an abundant thin and clear juice. This structure, on microscopical examination, presented two elements: epithelium arranged in the form of gland-tubules, and a tissue very rich in cells and nuclei, and corresponding to embryonal connective tissue. Sparsely scattered in some parts of this latter tissue were to be seen fibres of striated muscle. The tumour was classed by Professor Langhans as an adeno-sarcoma.

Professor Kocher states that but one other case has been recorded of removal of the kidney on account of new growth. In the twelve cases of nephrotomy reported by Népveu (*Archives Générales de Médecine*, Février, 1875), the operation was performed for other renal lesions, and, in the majority, in consequence of a wrong diagnosis. Notwithstanding the results of the operation in his two cases, the author argues in favour of the performance of nephrotomy in the treatment of renal cancer. The following facts in connection with this disease bear, he holds, on the question of treatment by operation: In 50 only out of 115 cases investigated by Rohrer were metastatic and secondary growths found after death; both kidneys were found involved in ten per cent. only of the total number of cases. Renal cancer occurs very frequently in early life, the subjects, in one-third of the number of cases, being under the age of ten years. If the growth be diagnosed at an early stage and when it is small, it may be readily removed through an incision made from behind in the lumbar region.—*London Med. Record*, Feb. 15, 1878.

Case of Congenital Ventral Hernia successfully treated.

In the *Bullettino delle Scienze Mediche di Bologna*, vol. xxiii. (abstract in *Annali Universali di Medicina*, December, 1877), Professor F. RIZZOLI describes the case of a male child, which had an opening occupying the umbilical and a great part of the epigastric regions. It was ovoid, its direction was vertical, and its boundary comprised the entire thickness of the skin and of the abdominal wall. Through this abnormal aperture the abdominal viscera escaped, especially

when the child cried, and were covered by the amnion and by Wharton's jelly. The skin around the sac was not continued over it, but was arrested at the same point as the abdominal wall. This, and the large size of the aperture, were conditions very unfavourable to the success of an operation. Dr. Rizzoli, however, undertook the treatment. He ordered the mother to avoid everything that might cause the child to cry; to give it milk frequently, but in small quantities; to employ ordinary means for the evacuation of the meconium; and above all, to prevent the escape of the viscera through the aperture. The part was covered with a piece of silken cloth, moistened with water and smeared with butter, and the surface of the sac was frequently bathed. The dressing was secured by a bandage round the abdomen, which, while it favoured the retention of the bowels, did not draw the edges of the aperture together. This arrangement was made in order to prevent the formation of a too small cicatrix, which might render the abdominal cavity too small to contain the viscera, and produce disastrous results, such as occurred in a case recorded by Goyrand, where death was caused by volvulus; and in one by Requin, where an inguinal hernia was formed on each side.

Under these precautions, after the amnion and the stump of the umbilical cord had fallen off, the surface of the sac became gradually covered with granulations, and cicatricial tissue advanced gradually from the border of the ventral aperture, covering it in completely, and retaining the viscera in the abdomen without the least injury. The ovoid cicatrix, when the report was made, was 0.6 inch long, 0.77 inch wide, and 2.2 inches in circumference.

When the child was eight months old, Dr. Rizzoli showed it to the Medico-Chirurgical Society of Bologna. It was then in florid health, and the umbilical cicatrix was sound.—*Lond. Med. Record*, Jan. 15, 1878.

Excision of Hard Chancre as a Preventative of Syphilitic Infection.

AUSPITZ (*Archiv für Dermatologie und Syphilis*, 1 and 2 Heft, 1877), excised the primary induration of syphilis in 33 cases. In 4 the result could not be observed; in 2, constitutional syphilitic symptoms were present at the date of the excision, and the disease followed its usual course; and in 4 the result is still doubtful. Of the remaining 23 persons 9 were nevertheless afflicted subsequently by syphilis, but in 14 cases within a sufficiently long period of observation after the excision no syphilitic symptoms had developed, and in these the excision may be held to have preserved the individuals from constitutional disease. Induration of the inguinal glands did not interfere with the success of the measure. The author believes that, if the excision had been practised at an earlier stage, the proportion of successful cases would have been larger. Those cases in which the wound healed without fresh induration remained, as a rule, free from syphilis. The author infers from the results that neither the primary induration nor indolent swelling of the inguinal glands is a proof of general infection of the organism.—*Lond. Med. Record*, Dec. 25, 1877.

Syphilis of the Testis in Young Children.

Dr. HENOCH (*Deutsche Zeitschrift für Prakt. Med.*, 1877, No. 11) observed seven cases of disease of the testis in syphilitic children. In one case, where death took place from cholera, there was an extensive interstitial hypertrophy of the cellular tissue, especially in the corpus Highmorianum. Henoch concludes from this case and from one described by Deprière, that in the earlier stages of interstitial orchitis a cure by mercury is possible; but, when fibroid new growth has taken place, no further change is to be expected. The ages of the children varied from three months to two years and a half; both testes were affected in four cases,

and the left in three. Tuberculosis of the testis, of which Henoeh saw four cases, always presented a hard nodular swelling confined to the epididymis, and was always accompanied by pulmonary tuberculosis or cheesy inflammation of the bones, while symptoms of syphilis were always absent.—*British Med. Journal*, Dec. 8, 1877.

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Congenital Malposition of the Testicle successfully treated by Operation.

MR. THOMAS ANNANDALE, at a late meeting of the Medico-Chirurgical Society of Edinburgh (*Edin. Med. Journ.*, Jan. 1878), exhibited a photograph of a rare congenital malposition of the testicle in the perineum, in which, as far as he knew, this malformation had been for the first time successfully treated by operation. One or two cases were on record where the attempt had been made to replace the displaced organ fully into the scrotum, but always without success. He believed his own success to be due to the use of antiseptics, meaning by this the Listerian method. He made an incision over the displaced testicle and drew it out, together with the tunica-vaginalis. One interesting fact was, that the part of the *gubernaculum testis*, usually attached to the bottom of the scrotum, was in this instance fixed to the ischial tuberosity. He then incised the scrotum and placed the testicle there, retaining it by means of a catgut stitch. At the same time he subcutaneously stitched up the opening in the perineum also with catgut. The result was satisfactory, and the testicle was now in all respects like the one on the opposite side.

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Prostatic Tumours removed during Lithotomy.

MR. THOMAS BRYANT, at a late meeting of the Pathological Society of London (*Med. Times and Gaz.*, Feb. 16, 1878), exhibited specimens of prostatic tumours which he had removed successfully during lithotomy. The first specimen was from a man of sixty-seven, who was operated on in Guy's Hospital in January, 1875, after having suffered from symptoms of vesical calculus for eighteen months. The blunt gorget was used; the stone was caught, and found to be large; a resistance was felt, and discovered by the finger to be a prostatic tumour situated between the stone and the hinge of the forceps. The whole was removed, when the calculus proved to be one inch and a half in diameter, and the tumour to consist of prostatic tissue and muscular fibre. There was no hemorrhage, and recovery was perfect. The second specimen was removed from a gentleman of seventy years, who had suffered from vesical symptoms for four years, and was extremely ill. Lithotomy was performed; the gorget had to be used; and the stone, when seized, could not be extracted. A portion of the prostate was then ascertained to be in the way, when, by rotation of the forceps and pressure backwards on the tumour, the hinge of the instrument caught the growth, and both it and the calculus could be extracted. The patient was perfectly well in six weeks. The growth consisted of prostatic tissue. Mr. Bryant said that in both these cases the patients had been relieved of stone and of another cause of distressing symptoms by a single operation. Convalescence was not affected by the operation. In other words, benefit seemed to have followed the removal of prostatic tissue. It appeared to him that in a similar case the surgeon might follow his practice, or even search for the condition; but he would hardly suggest operation for the relief of symptoms due to enlarged third lobe of the prostate. The operation had first been mentioned by Sir William Fergusson thirty years ago.

Treatment of Cystitis.

Mr. ROBERT PLESSE WHITE, Surgeon to the Meath Hospital, advocates (*Dublin Journ. of Med. Science*, Jan. 1878) the treatment of cystitis by injections of a weak solution of borax (half a grain to the ounce of warm water). His experience has shown him that the whole "role" of treatment hitherto practised is of little avail.

Pseudo-Membranous Cystitis and its Treatment.

This variety of cystitis is generally met with after the application of blisters. It is, however, sometimes found in the case of chronic and long-standing lesions of the bladder, such as calculi, tuberculization, and muco-purulent cystitis. The nature of the false membranes thus expelled with the urine has been sufficiently discussed. After it had been long admitted that they were the result of an exfoliation of the mucous membrane, it was afterwards sought to be demonstrated that they were almost always formed by fibrine, inclosing epithelial cells. This opinion is defended by M. Girard, and it seems the most rational; however, he admits, with Dolbeau, the exfoliation of the mucous membrane by fragments; but as a very rare phenomenon. The treatment consists specially in repeated washings out of the bladder, followed by slight cauterization with a weak solution of nitrate of silver, which is left in the bladder during one or two minutes. M. GUYOT (*Thèse de Paris*, 1877) obtains neutralization with water in which salt has been dissolved. M. Guyot also seems to have successfully employed a solution of borax, of the strength of one part to the hundred, in place of the nitrate of silver.—*Lond. Med. Record*, Dec. 15, 1877.

The Pathological History of Cysto-Phosphatic Deposits.

Sir HENRY THOMPSON, in a short paper on this subject (*Lancet*, Jan. 12 and 19, 1878), gives the following as the conclusions at which he has arrived in relation to this subject:—

1. That, in its healthy condition, the bladder rarely, if ever, retains, but, on the contrary, expels all phosphatic deposits.
2. That, when the bladder is not healthy, but affected by chronic inflammation, provided it is not considerable nor very prolonged in duration, the power of expulsion is still almost as great as in the healthy organ.
3. That there is a diseased condition of the inner coat of the bladder, in which its ability to expel phosphatic deposit is almost lost, and in which the formation of concretions—and if these are neglected, of stone—is certain to occur. It by no means infrequently happens after cystitis that the mucous coat acquires a morbid condition, which is not so much one of actual inflammation as the result of long continuance of that action. The membrane loses its polish, usually in one or more circumscribed spots, and becomes abraded, roughened, even flocculent, and exudation of lymph sometimes takes place on the surface. This matter, which is extremely tenacious, and to which phosphatic salts strongly adhere, is wholly different, it need hardly be said, from the ordinary and well-known viscid mucus of the bladder. The latter has often been regarded, not without apparent reason, as a mechanical agent for gluing together crystalline particles to form concretions, although I doubt that it acts thus to any considerable extent. The lymph exuded from an abraded spot becomes loaded with phosphates, attaching them to the surface beneath, from which the tenacious mixture is not easily removed.

Let me illustrate the action which takes place thus. Every hospital student

know that if a new gum-elastic catheter be fastened into the bladder and left there, the urine being healthy, no phosphatic deposit will occur during the first day or so, on the small portion of the instrument which protrudes within the cavity of the organ. If, however, the catheter remains for a considerable period, whitish granules will appear on the surface at different points, and these in time coalesce and form an enveloping crust. What is the *rationale* of the action? Simply this: While the surface of the catheter was smooth and polished, no phosphates appeared, but after the urine had partially dissolved and abraded the varnished surface, making it slightly rough, and beginning to expose the fibrous basis of the instrument (a process which takes place much more rapidly in ammoniacal than in healthy urine), the roughened surface determines the precipitation of the salts upon it. The same thing occurs on the surface of a calculus as long as it is retained within the cavity of the bladder, the urates or oxalates being deposited while inflammation is absent, phosphatic salts when that change has taken place. And thus it is that in the rings of a cut calculus may be seen the history of a patient's troubled life during the period of its formation, quiet intervals showing one form and character of deposit, attacks of inflammation marked by a white phosphatic ring, and so on. Another illustration is furnished by the absence of deposit on a well-made India-rubber catheter, although retained for a long period. Its surface resists the action of urine; if, therefore, the instrument was smooth at first, no precipitate takes place. I have left, in very exceptional circumstances, such a catheter for six weeks without removing it, and then found it as free from deposit as when introduced.

Now, these phenomena explain the reason why cysto-phosphatic deposits in some cases obstinately persist and recur. So long as the mucous lining of the bladder retains its polish, so long as no serious denudation of epithelium takes place, no precipitated phosphates, as a rule, will be detained in the interior, provided the organ can empty itself, or can be emptied artificially. No adhesion of phosphatic material to the wall will result at any point, and consequently the appearance of deposit is not in these circumstances a very serious matter. But—and we shall see hereafter how closely this subject bears on the operation of lithotomy—the moment the mucous coat of the bladder has notably lost in any one spot its natural polish, has become denuded or roughened, so soon there is danger that phosphatic salts will be attached to that spot, and become the fertile and continuous source of concretion-formation in the bladder. If degradation of the tissues has gone far enough to permit the exudation of lymph, the condition approximates to that of ulceration, which, however, is rare in the bladder, and only present in very severe or long-continued disease. An illustration of the action which takes place in such circumstances may occasionally be observed after lithotomy, when the urine deposits on the surface of the wound a phosphatic coating, which adheres sometimes with great tenacity to the exuded lymph there, while no deposit whatever occurs in the bladder itself. In those somewhat rare instances of calculus partially encysted in a sac of the bladder, the small rough surface which is exposed in the cavity acts in a similar manner. Phosphates are deposited upon it, and when the aggregation has assumed a certain size, it is detached, falls into the bladder as a concretion; the process goes on at the original spot, and may be repeated again and again.

Glycerine in the Treatment of Internal Hemorrhoids.

Dr. DAVID YOUNG, of Florence, recommends (*Practitioner*, Jan. 1878) the use of glycerine, in two drachm doses night and morning, as an efficacious palliative for internal hemorrhoids.

Ulcers from the Use of Enemata.

Professor KÖSTER, of Cologne, has an article on this subject in the *Correspondenzblatt, der Arzte, Verbin. von Rheinland*, No. 20, 1877. There is not unfrequently found in the rectum an ulcer (hitherto observed only by Recklinghausen) differing in its appearance and its constant situation from all other known ulcers of the intestinal tract. It varies in size, is usually round, frequently penetrating the intestinal wall like a funnel in a direction from below upwards, and from without outwards; there is little or no inflammatory proliferation of the base and edges. It is always situated in the anterior wall of the rectum, generally about two inches—never less than one nor more than three inches—above the anus. Sometimes only the mucous membrane is ulcerated and undermined; sometimes the entire wall of the rectum is destroyed; and in some cases there is suppurative of the pelvic connective tissue. In many cases, fatal peritonitis may be produced by perforation of such an ulcer; and even puerperal peritonitis has had its origin in rectal ulcer.

The form and situation of the ulcer indicate that it is of traumatic origin—being, in fact, caused by the somewhat unskilful use of the enema-syringe. In many cases the correctness of this supposition may be confirmed by inquiry. At the part in question, the rectal folds of mucous membrane and the thickness of the intestinal wall, and in front the prostate or uterus, and in puerperal women the head of the child, present a resistance to the horizontal passage of the pipe. This resistance to the mucous membrane is overcome by thrusting it aside; but, in doing this, there is risk of wounding it with the point of the syringe, and of infiltrating the submucous or circumrectal cellular tissue with the injection.

The author finally shows that, according to the researches of Ribes, and the observations of more modern surgeons, the opening of intestinal canal fistula corresponds with the situation of dysenteric ulcers in that the latter are never found in the posterior wall, nor more than three inches above the anus. Hence it is probable that a large number of fistulae of the rectum owe their origin to the enema-pipe.—*London Med. Record*, Jan. 15, 1878.

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Production of Local Artificial Anæmia as a means of Treating Diseases in the Extremities.

Dr. BERNARD COHN'S communication (*Berliner Medicinische Wochenschrift* October 29, 1877) is founded on an attempt made in three cases to treat acute and chronic inflammations in the extremities, by temporarily rendering the limb bloodless by means of Esmarch's bandage.

Two of the cases reported were of an acute kind. One was an acute phlegmon of the toe, with inflammatory swelling of the foot, in which, after only fifteen minutes' application of the bandage, the inflammatory swelling and pain notably diminished. The other case was a very painful diffuse inflammatory swelling of the forearm. After one application of the bandage, the duration of which is not mentioned, the pain, and, to some extent, the swelling, disappeared. Nor did they reappear when the compression was removed. Some tenderness continuing, the bandage was reapplied next day with a completely successful result. On these two cases the author properly lays less stress than upon the following one. A child $3\frac{1}{2}$ years of age had suffered for eighteen months from a white swelling in the knee. The disease had originated in a fall, and a well-marked acute stage had been followed by a condition in which the chronic changes in the articulation, defined as tumour albus, were quite characteristic. The joint was swollen, painful, much flexed, and scarcely movable, either actively or passively. During twelve months, treatment had been pursued both in private and at the polyclinic; five

gypsum bandages, which had been kept applied during twenty-six weeks, had, amongst other things, been tried. The parents finally had ceased to seek medical aid, and for some months the disease had been left to itself. At this time the child came under Dr. Cohn's care. The affected knee was an inch and a half larger in circumference than the other one, the bones felt thickened, the subcutaneous tissue was infiltrated, and the borders of the patella were difficult to make out. No effusion into the joint was discovered. Passive movements were very limited and painful, and the tenderness on pressure was considerable. The general condition of the child was otherwise satisfactory.

The treatment was commenced by applying the bandage only for a few minutes, but, after four or five days, it could be borne for an hour daily, and sometimes longer. Occasionally the application was made twice daily, when it was allowed to remain half to three-quarters of an hour each time. After this had been practised during a period of three weeks, it was found that the difference in size of the two joints was reduced from four centimetres, or an inch and a half, down to half a centimetre. The condyles had become restored to their normal form, the patella had become loose and movable, the pain and tenderness had completely disappeared, the amount of passive motion was increased, and there was no pain on movement.

Forcible extension was now practised under chloroform, and was attended by a recurrence of the inflammation; but this was rapidly subdued by a continuance of the previous treatment. The final result was almost perfect cure; the little patient could walk and move the joint in all directions without pain; and the only trace of the previous disease which remained was a trifling amount of swelling and a somewhat impaired mobility of the joint.

Dr. Cohn meets some of the objections which may be urged. First, as to the vaso-motor paralysis which follows the use of Esmarch's bandage, and the consequent surcharging of the capillaries after its removal, he is inclined to doubt that this is anything more than a mere temporary condition. Another objection, that the capillaries in the inflamed area are not really emptied, he considers cannot probably be denied, but thinks the property of diffusion of fluids practically answers the same purpose. Dr. Cohn gives some details as to the mode of application of the bandage, the necessity for the limb being thoroughly emptied of blood, and the occlusion a perfect one; also that the final constriction should be made with several turns of the bandage superimposed, rather than with a narrow rope or tube, as this causes less injury, and is more readily borne. For adults the breadth should be four centimetres (an inch and a half), and for children from two and a half to three. How long, he asks, can this bloodless state be maintained? The limit of safety is not likely, he thinks, ever to be reached, and we need not be anxious on this score, if the shutting out of the circulation be perfect. An imperfect occlusion is dangerous. The blood passes by the arteries into the limb, while the venous outlets are completely stopped. The pain is a great difficulty in this method of treatment, but it may be reduced considerably by not applying the bandage constricting the limb above tighter than is absolutely necessary, remembering always that the tendency is to apply it too tightly. Further experience must determine how often the constriction may be repeated, and whether it should be continued on each occasion as long as possible, or for shorter periods at shorter intervals.

The author, in conclusion, begs for a trial of his suggested method; and certainly the results obtained, especially in the third of his cases, would appear to justify an affirmative answer to his request.—*London Med. Record*, Dec. 15, 1877.

Pathogenesis of Genu Valgum.

In a paper recently read before the Société de Chirurgie in Paris (*L'Union Médicale*), M. VERNEUIL rejects the theories of the muscular and ligamentous origin of genu valgum, which do not appear well founded. While admitting that there is still considerable obscurity about the question, he adopts the osseous theory, basing his conclusions upon personal observation. This is the view held by many distinguished authors, who only differ in assigning the deformity, some to hypertrophy of the internal condyle, others to atrophy of the external.

M. Verneuil is disposed to accept the doctrine of the deformity being caused by hypertrophy of the internal condyle of the femur, as put forward by MM. Ollier and Tripier, who attribute genu valgum to abnormal activity of the epiphysary cartilage of the lower end of the femur. These authors, experimenting on animals, have been able at will to provoke hypertrophy of the internal condyle by exciting the internal half of the epiphysary cartilage, and of the external condyle, by irritation of the external half.

Although M. Verneuil has not had an opportunity of verifying clinically M. Ollier's theory concerning the two halves of the cartilage, he has, however, been able to observe some facts for himself, which confirm in a general way the principle upon which it is based.—*Lond. Med. Record*, Jan. 15, 1878.

Curious Case of Ulceration of the Internal Carotid.

At the Petersburg Medical Society (*Petersburg Med. Week.*, Dec. 29) Dr. ERICHSEN related a case of hemorrhage, which he regarded as unique. A peasant, eighteen years of age, and otherwise robust, was admitted into the Marien Hospital for a phlegmonous angina of two days' duration. On the second day after his admission an abscess in the throat broke, discharging normal pus, and giving complete relief. On the sixth day a slight bleeding from the abscess occurred, which was easily arrested by a plug. But twenty-six hours afterwards arterial hemorrhage appeared, which terminated the patient's life in a few minutes. At the autopsy, the cavity of the abscess, about the size of an egg, was found filled with fresh coagula. The wall of the abscess was in contact with the internal carotid, which was perforated by a circular aperture half a centimetre in diameter, a funnel-shaped dilatation from within outwards being recognizable at this point. No part of the wall of the artery in its further course exhibited any diseased appearance. As the pus was in a normal condition, the cause of the destruction of so firm a structure as the wall of the carotid in nine days is involved in obscurity. Dr. Wulff suggested the possibility of a secondary abscess having formed within the sheath of the vessel; but the preparation afforded no proof of this occurrence.—*Med. Times and Gaz.*, Jan. 19, 1878.

Anomalous Case of Fusion of the Radial Artery with the Median Basilic Vein, simulating an Arterio-Venous Aneurism.

A curious case of this has been communicated to the Surgical Society of Paris by Dr. CHALLOT, Prof. Agrégé of the Faculty of Montpellier; and a report regarding it was made to the Society by Mr. DELEUS, Jan. 20, 1878.

The subject of this anomaly was an old man, admitted into the hospital Saint-Eloi, Montpellier, to be operated on for cataract. The operation was followed by erysipelas, which speedily terminated fatally. It was observed on the entrance of the patient into the hospital that there existed a tumour at the bend of the elbow, which he stated he had always had. An examination showed the principal

signs of an arterio-venous aneurism—movements of expansion, vibratory tremor, bellows sound, etc. There were not, however, either general hypertrophy of the limb, nor any increase of temperature. The autopsy revealed the following condition: In place of the aneurismal tumour expected to be found, there was a fusion of the radial artery with the median basilic vein for an extent of five or six centimetres. *L'Union Médicale*, Feb. 5, 1878.

Spontaneous Perforation of the Popliteal Artery in a Case of White-swelling.

Dr. BARD, of Lyons, records an instance of this rare lesion in the *Gazette des Hôpitaux*, 1877. The patient was a scrofulous boy, aged 9, who had cold abscesses, and a suppurating white swelling of the right knee. The disease of the knee was of two years' duration; and, when the patient was admitted to hospital, consisted of a large tumour covered with cicatrices belonging to fistulous openings. The leg was bent nearly at a right angle; the muscles were contracted, and movement was painful. During the patient's stay in the hospital, fresh abscesses opened, especially on the posterior part of the joint. Drainage was applied across a large purulent deposit in the popliteal space; about thirty days afterwards, spontaneous hemorrhage occurred, but ceased of itself. Next day, after a paroxysm of cough and straining at stool, it returned, and was arrested by the application of Esmarch's bandage. It did not again recur; but the child died, and at the necropsy there was found at the anterior part of the popliteal artery (where the drainage-tube could not have reached it) a circular opening about one-twelfth of an inch in diameter; its edges were dentilated and torn, and presented no trace of inflammatory or reparative action.—*London Med. Record*, Jan. 15, 1878.

Employment of Catgut to arrest Hemorrhage from a Bone.

Dr. RIEDINGER (*Gazette de Strassburg*, No. 9, 1877) having performed amputation of a thigh, was troubled with the hemorrhage that proceeded from the bone. As he was proposing to treat it on Lister's plan, and in the hopes of immediate union, it became necessary to stop the bleeding; direct compression proved fruitless, though it was continued for some time. At length he bethought him that catgut is absorbed when introduced in the living tissues, and he immediately cut off several ends which he introduced successively into the bleeding orifice. The flow of blood ceased at once, and no further difficulty was experienced. In order to study the manner in which catgut behaves under these circumstances, Dr. Riedinger amputated the leg of a dog and introduced a No. 3 thread into the medullary canal of the fibula. The wound was closed, and healed by first intention. At the end of fifteen days the dog was killed, and on examination not the least trace of the catgut could be found. A second and larger dog was subjected to the same operation. This being done the compact substance of the tibia was perforated with an awl, and a piece of catgut introduced into the medullary cavity. Immediately reunion followed closing of the wound, and the animal was killed in three weeks. The wound made by the instrument was contracted, but not the slightest trace of the catgut could be discovered either in it or in the medullary cavity.—*Practitioner*, Feb. 1878.

Subcutaneous Fracture of Exostoses.

At a late meeting of the Clinical Society of London (*Lancet*, Dec. 22, 1877), Mr. MACNIDER read notes of, and exhibited two patients whom he had submitted to a novel method of operation for exostosis—"true subcutaneous treatment by fracture." The first was a case of exostosis of the femur in a girl fifteen years of age, admitted into the London Hospital on June 23, 1874. She had for many

months suffered from pain and discomfort at the back of the left knee, and was unable to extend the leg fully upon the thigh. When walking she could only get her toes to the ground. On examination a bulging of the thigh, just above the external condyle, could be seen, and this proved to be caused by a pedunculated exostosis at the back of the femur on its outer side, just at the junction of the epiphysis with the shaft. The body of the tumour seemed to press against the tendon of the biceps and the external popliteal nerve. To relieve pain and enable her to walk, an attempt was made to dislodge the tumour. Absecession was discountenanced from the risk of suppuration, osteo-myelitis, etc., and fracture of the pedicle by violence, without any wound whatever, was preferred to subcutaneous division of the pedicle with the saw or chisel. One of three results Mr. Maunder anticipated might follow this procedure: necrosis of the fragment and its extrusion by suppuration, which probably would not take place until all risk of extension of the suppuration to the femur had been prevented by closing in of the bone-cells opened by the operation; or absorption of the body; or its reunion, but possibly in such a position as no longer to interfere with the patient's comfort. On July 8, 1874, the skin being protected by a piece of chamois leather, Mr. Maunder seized the tumour with a pair of gas-fitter's pliers, and by a sudden jerk broke the pedicle. Ice was applied for two or three days, some local tenderness, swelling, and ecchymosis resulting from the operation. In spite of passive movements reunion occurred, but the body of the tumour occupied a new position, and caused no further discomfort. The second case was that of a girl fourteen years of age, admitted into the London Hospital in February, 1877, with a rather large pedunculated exostosis attached to the inner edge of the tibia, just below the internal tuberosity. The swelling appeared first two years ago after a sprain of the right knee. A like operation to that in the first case was performed, but with a different result. The pain and inability to walk have been removed, but the tumour has not reunited to the shaft of the bone; and its mobility can readily be recognized.

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Subcoracoid Dislocation of the Humerus by Muscular Contraction.

Dr. G. LAPPONI relates, in the *Rivista Clinica de Bologna*, Jan. 10, 1877, the following case:—

The subject was a girl aged 15, who had some years previously suffered from chronic inflammation of the right radio-carpal articulation, and afterwards from some not well-defined inflammation of the shoulder-joint of the same side, as well as scrofulous ulcers of one leg. Of these affections she no longer presented any traces; her body was well developed, especially in the bony parts.

One morning in August, soon after rising from bed, she was sitting near an article of furniture about 3½ feet high, on which she rested her right arm horizontally, with the elbow bent and the hand hanging over the edge. She sneezed violently twice; and, without having made any other movement, she was seized with severe pain in the right shoulder-joint; at the same time, her arm was raised from the surface on which it was lying, and then fell useless. There was no numbness of the hand or arm; motor power remained intact in the fingers, but all attempts to move the upper part of the arm produced much pain.

On examination, the head of the humerus was found lying beneath the coracoid process. Reduction was effected by making extension on the forearm and rotating the limb outwards, while the head of the humerus was guided by manipulation into the glenoid cavity.

Dr. Lapponi supposes that the dislocation was due to an exaggerated action of the great pectoral muscle; and that the contraction of the deltoid, when the arm was observed to be raised, completed the displacement.—*London Med. Record*, Feb. 15, 1878.

OPHTHALMOLOGY AND OTOTOLOGY.

Migraine of the Eye.

Dr. GALLZOWSKI records (*Lancet*, Jan. 19, 1878) the following brief notes on this affection.

There exist a certain number of ocular affections in which no lesions are to be found, and which might lead one to suspect the existence of some serious malady.

Migraine of the eye, or periodic hemiopia, is marked by very characteristic visual derangements, which it is of great importance to recognize, so that they may not be confounded with serious cerebral or other affections. Migraine of the eye is not so rare as one might suppose, and I have collected observations on twenty-one cases of this complaint.

The symptoms which characterize this affection are as follows:—

1. The complaint generally attacks those who have for several years been subject to ordinary migraine; this latter ceases and is replaced by visual nervous symptoms, which, however, may come on without being preceded by any other nervous symptoms.

2. Migraine of the eye is more frequent in females than males, and occurs at all ages, but I have only twice seen it in individuals as young as thirteen or fourteen.

3. The onset of the attack is not always the same. In some cases the ocular migraine is preceded by headache; while in others, and these are more frequent, the visual trouble comes on quite suddenly, and is characterized either by hemiopia or central scotoma.

4. The hemiopia is either monocular or binocular. The former is sometimes lateral, and at other times it occupies the upper half of the visual field. In the binocular form the field of vision is obscured laterally, either in the right or left half of both eyes; the sight is completely lost in the half of the field of vision; nevertheless the acuity of vision remains almost normal. The hemiopia is only temporary, lasting from twenty to fifty minutes, and then disappearing completely. Sometimes, however, I have seen it pass into complete blindness, lasting for a brief period; or, again, in other cases it is followed by a slight indistinctness of vision for the remainder of the day.

5. Central scotoma is more rarely the chief symptom of the malady, which maintains this form throughout; but three times I have seen it transformed into hemiopia.

6. Flashes of light, and rainbow colours in zigzag forms, generally accompany ocular migraine. These phenomena are perceived by the patient in the obscured part of the visual field, becoming gradually more and more indistinct, and finally disappearing altogether. Three of my patients said they observed thousands of luminous muscæ and silvery spangles darting about in the darkened field of vision.

7. There may be more or less violent attacks of vomiting preceding or accompanying the migraine of the eye, but these are frequently altogether absent.

8. After the disappearance of all the ocular symptoms, giddiness, more or less intense, comes on, and continues some hours or even days.

9. The scintillating hemiopia is almost always followed by a headache, which continues all the rest of the day, either in one-half or over the whole of the head.

10. The eyeball is often painful and tender, the patient experiencing a sensation of weight and tension at the back of the orbit, and occasionally the eye is red and watery.

11. Periodic hemiopia generally recurs at long intervals, once or twice a year only; but in certain cases it is more frequent, and may recur as often as once a

month, once a week, or even sometimes twice or thrice a week. In these latter cases there supervenes a disturbance of sight and a sort of asthenopia, which is almost permanent, and renders all work impossible.

12. Ocular migraine is often observed in those troubled with dyspepsia, but this last symptom is not constant: when it exists it almost always indicates the presence of gout, which, as Trousseau and Charcot have well demonstrated, often predisposes to migraine.

13. Periodic hemiopia is observed sometimes in pregnant women, but then it is accompanied neither by scintillations nor by headache. On the contrary, in pregnant women one sees cerebral troubles characterized by a sort of aphasia and by encephalopathy, which may continue for half an hour or longer.

14. Analogous cerebral derangements may also be found in migraine of the eye, but they are relatively rarer and of shorter duration than in the preceding case.

15. Ocular migraine does not present any gravity, and disappears of itself under the influence of a tonic strengthening regimen. The sulphate and bromhydrate of quinine have seemed to me speedily to relieve the symptoms. The employment of ferruginous preparations, the cold douche, and avoidance of all exciting aliments, such as coffee, liqueurs, spices, and such like, may also act efficaciously in accelerating the cure of migraine of the eye.

— *Salicylate of Soda in Rheumatic Iritis.*

DR. GALEZOWSKI addresses a note to the Académie de Médecine (*Bulletin de l'Acad.*, Feb. 5th) in which he observes that in *rheumatic iritis*, accompanied by plastic exudations and numerous posterior synechiae, every new relapse becomes dangerous by favouring the obliteration of the pupil. In an eye attacked by this relapsing iritis there is often much difficulty met with in overcoming the inflammatory accidents. In eighteen cases treated by the salicylate he has obtained an amendment in all the symptoms, and often in three or four days, in the same patients, who, prior to its employment, used to be under treatment with similar symptoms for a month or six weeks. What is most remarkable is the immediate disappearance of the pain and redness, and afterwards the rapid diminution of plastic exudations. In two cases of *irido-choroiditis*, or *irido-cyclitis*, the salicylate arrested very promptly the inflammatory accidents, and immediately suppressed the violent pains which are ordinarily so obstinate as to render iridectomy obligatory. Excellent results have also been obtained in rheumatic inflammations of the sclerotic, and especially in ten cases of *scleritis* and *sclero-keratitis*. In these, wherein no other treatment gives satisfactory results until after several months, the salicylate produced an amendment, and even a cure in from one to six weeks.—*Med. Times and Gaz.*, Feb. 16, 1878.

— *Acute Glaucoma following a Single Instillation of Atropia.*

The following case is recorded by Dr. HUGO MAGNUS (*Zehender's Klin. Monatsbl.*, 1876, xiv. p. 386), and the patient was a man aged 72. The atropine was dropped in to facilitate a proper examination of cataract. The right eye only was affected, though the drops had been put in both. The patient had been seen on two occasions before the atropine was used, and there was no occasion to suspect any glaucomatous condition. The symptoms came on within a few hours of the drops being used.—*Royal London Ophthalmic Hospital Reports*, Dec. 1877.

Appearance of the Fundus in General Anæmia.

Dr. HIRSCHBERG read a very important paper at the Ophthalmological Congress in 1877 on the appearance of the fundus oculi in general anæmia, and on retinitis and atrophy, following loss of blood.

The author stated that E. von Jäger observed in his monograph on the ophthalmoscope, published in 1876, as well as in a separate communication in 1877, that it is very seldom that any change can be observed in the central vessels of the retina in anæmia. He also observed that it is true that it is very difficult to detect with the ophthalmoscope any changes in the fundus in anæmia; and this as the result both of clinical experience and of numerous experiments on dogs. Even when these animals were frequently bled until syncope supervened, the retina exhibited no characteristic appearances. Nevertheless, Dr. Hirschberg found that in man, in high degrees of anæmia, certain typical changes occur; but that these are not in such cases as come under the observation of the ophthalmic surgeon. These changes are of three kinds.

1. The papillæ of both eyes are pale, although the central vessels retain their normal size. Later the disk becomes of a shining white, as in atrophy. The bluish colour of atrophy, however, is not seen, neither is there abnormal sharpness of the disk; and vision in general remains unaltered, so long as there are no blood-spots or white exudations on the retina. The normal condition of the disk returns with convalescence. This affection is observed both in pernicious anæmia and in ordinary anæmia from loss of blood.

2. In chronic anæmia, whether idiopathic or secondary, the disk becomes clouded with a whitish haze, and the central reflex streak in the arteries and veins appears indistinctly, both in the erect and in the inverted image. The blood-vessels become narrowed, and cannot be followed to any great distance towards the periphery. In the erect image, the disk is seen to be clouded in slender radiating streaks, and the vessels to be slightly veiled. As in the former class of cases, hemorrhages and grayish exudation-spots occur on the retina. The indistinctness of the disk remains during a long time with very slight changes. These cases often terminate fatally.

3. A few days after exhausting hemorrhage, neuritis occurs, and, without any appearance of swelling, the papilla becomes spread in various directions at its edge; there is considerable cloudiness of the retina, especially towards the periphery, and in the vicinity of the yellow spot, whilst on the whitish background numerous fresh red blood-spots are seen. There is considerable loss of vision, but it is not complained of by the apathetic patient, and in a few days absolute amaurosis supervenes.—*London Med. Record*, Feb. 15, 1878.

Retinitis Pigmentosa without any Pigment visible with the Ophthalmoscope.

Cases of this nature, constituting one of the most curious points in the study of retinitis pigmentosa, are rare. Such have, however, been recorded by MM. Galezowski, Landolt, and Maurice Perrin. That which is here related by Prof. HUARDÉZ (*Annales d'Oculistique*, November-December, 1877) presented the same remarkable histological changes as did that of M. Perrin (*Annales d'Oculistique*, 1875). Mlle. V., aged eight years, had suffered, according to her parents, from hemeralopia from her earliest infancy. Her grandparents on her mother's side were first cousins, and a first cousin of her maternal grandmother, aged fifty-five, whose parents were cousins, had also been afflicted with hemeralopia all her life. The little patient was very intelligent; her hearing and her pronunciation were also perfect. The visual defect must, therefore, be ascribed

to consanguinity in accordance with the opinion of Von Gräfe, and not to idiocy or to deaf-mutism, as suggested by Liebreich.

The hemeralopia was very marked. The field of vision was considerably narrowed, and to an equal extent in the two eyes. Central vision was good, as also the perception of colours in the same region; and she could read No. 3 of Wecker's metrical types fluently.

With the ophthalmoscope there was a slight haziness of the retina around the disk, as also around the entire peripheral region. The macula lutea was normal. There was no trace of pigmentation of the retina whatever.

In all probability the conditions of the retina resembled those recorded in M. Perrin's case, and which are thus described: "The colouring matter had no existence along the track of the vessels as in the cases of retinitis pigmentosa of Landolt; it is, on the contrary, localized in the external granular layers of the retina. . . . The nerve-fibres are atrophied, but the fibres of Müller are unaffected; the ganglionic cells are intact, as are the two layers of granules. Immediately on the outside of these, however, there appear pigmented masses of cells containing from eight to ten cells in each; fine molecules of pigment are here and there lodged in the interior of the granules themselves." In no portion of the retina was any pigment found in the neighbourhood of the vessels, so that its presence elsewhere could not be ascertained by the ophthalmoscope, hidden as it was too by the infiltration of the anterior layers.

In the present instance, the diminution of the field of vision indicated that the pigmentation, assuming its existence, was extensive. The deposit does not in these cases, as in the typical forms of the affection, assume the stellate appearance which is, in fact, due to the ramification of the bloodvessels with their sheaths; for as yet its appearance has only been described amongst the external layers of the retina which have no bloodvessels. The colouring matter appears to be derived from the choroidal epithelium, and is absorbed by the rods and cones and by the external granules, all of which become blended together, and form irregular masses in which the pigmentation is well marked, but not radiating or stellate in its arrangement.—*London Med. Record*, Feb. 15, 1878.

Retinal Aneurism.

Two instances of this rare affection are very briefly related in the last number of *L'Année Médicale*, the monthly journal of the Medical Society of Caen and Calvados. Dr. BRIERE, of Havre, who relates the cases, points out their analogy with the miliary aneurisms of the brain, with which the researches of French observers (especially M. Lionville) were the first to make us acquainted. He refers also to a case of retinal arterio-venous aneurism described by Magnus Hugo in Virchow's *Archiv* in 1874. The first case described was seen by Dr. Brière two years ago. It was in a well-built, muscular man, forty years of age, who experienced great pain in the left eye during defecation, followed by disturbance of vision in that eye. The eye was examined ophthalmoscopically by Dr. Brière three hours afterwards, and he found a spherical tumour, the size of a pin's head, attached to one of the secondary divisions of the central artery. He observed also a slight expansile pulsation of the tumour synchronous with the temporal pulse. No change was noticed a fortnight later. The patient then left Havre, and his subsequent history could not be traced. The second case occurred in a female seventy-three years of age, the subject of chronic bronchitis, and suffering from violent paroxysms of coughing. In June, 1877, she first noticed some visual disorder; objects were ill-defined, and appeared distorted. On examination of the fundus of the left eye, an ampullary dilatation of one of the arterial twigs to the other side of the disk was observed. This fusiform aneurism appeared to

measure two millimetres and a half in breadth and four millimetres in length. It had determined a central scotoma. Beyond this lesion, which would probably terminate in rupture and hemorrhage, the fundus was normal.—*Lancet*, Feb. 23, 1878.

Treatment of Paralysis of the Muscles of the Eye.

The *Klinische Monatsblätter für Augenärzte* for November contains a short communication from Professor J. MICHAEL on the treatment of paralysis of the muscles of the eyeball by gentle traction. His treatment, which was successful in a recent but total paralysis of the abducens of rheumatic origin, consists in taking hold of the insertion of the affected muscle with a pair of fixing forceps, and gently drawing the eyeball as far as possible in the direction in which the muscle would move it; afterwards bringing it back to its former position. This manœuvre is repeated backwards and forwards for about two minutes every day. The author states that the manipulation is attended by but little pain, and that the slight inflammation set up in the conjunctiva is easily combated by cold applications. After each sitting a slight amelioration was observed. Immediately after the sitting, the muscle was found to be capable of contracting to the extent of a line and a half to two lines. This power was less after an hour, but was still perceptible. He states that recovery was perfect after five weeks of this treatment.—*London Medical Record*, Dec. 15, 1877.

Binoocular Accommodation.

The additional part of Zehender's *Monatsblätter*, for July, consists of an inaugural dissertation on this subject by Dr. THEODORE RUMPF, read before the medical faculty of Heidelberg. This is a work of the highest physiological interest, as well as of extreme practical importance to the ophthalmologist. The author shows, by a series of the most careful experiments, that the accommodation of the two eyes is always equal both in emmetropia and in ametropia, except, as has been shown by Werth, where the faculty of binocular vision is absent, as in strabismus from considerable defect of one eye. This fact is easily demonstrated, in the case in which the two eyes have equal refractive power, by placing a printed page on one side of the visual field so that it is nearer to one eye than to the other. It will then be found that only the eye which is nearest is accommodated to the distance of the page: by covering this eye, the page will be seen out of focus. He explains the fact that Schneller and Wernow arrived at a different conclusion, by their not having eliminated the effect of astigmatism. Indeed, in repeating their experiments, he arrived at a negative result. His measurements were all effected with a fine double wire, so that only one meridian of the cornea was used: thus completely eliminating the error of astigmatism.—*London Medical Record*, Dec. 15, 1877.

Therapeutic Use of Electricity in Ophthalmology.

A. BERGM (Hjygiea, 1877, and *Nordiskt Medicin. Arkiv*, Band ix., Häft 4) has, during the last ten years, used electricity in the treatment of paralysis of the ocular muscles, arising from peripheric causes: of muscular asthenopia incapable of treatment by glasses or by operation; of blepharospasmus resulting from neurosis of the trigeminal nerve; and also, in recent years, of amblyopia. In the muscular affections he generally used the induction-current, in the nervous the constant current, exclusively. For stimulation of the retina, the most evident sign of which is the manifestation of phosphene, the most advantageous plan is to apply one electrode to the nape of the neck, and the other on or near the eye.

By changing the direction of the current the circuit remaining closed, a more powerful irritation is produced than when the circuit is simply closed or opened, as Brenner has shown. A weak current should be used, and the remedy must be applied daily. The author has obtained much better results from the simultaneous use of electricity and injections of strychnia than from the latter alone. In speaking of hemiopia, Bergh denies that the inner or outer field of vision of one eye can be defective while that of the other is normal, just as both middle halves can be defective while the lateral ones perform their functions, provided that optic neuritis be not present. He appears also to doubt the reality of the so-called *amblyopia exanopsia*. The author naturally seeks in the first place the remote causes of amblyopia, if such can be discovered. But even in this, as in all cases when the cause of the malady remains obscure, experience has shown that the use of electricity and of strychnia, either alone or together, produces very favourable results. The prognosis, however, must always be made cautiously.

All the cases of idiopathic hemeralopia which came under treatment were cured in a very short time by electricity and strychnia. In congenital amblyopia no result was obtained. From January 1, 1874, to March 31, 1877, the author was consulted in fifty-nine cases of amblyopia, not including congenital. Of these, fifteen were treated with electricity and strychnia, four with electricity, and in all these cases improvement was produced. Two cases did not come under treatment. The remaining 38 were treated with strychnia alone; of these, 23 were not again heard of; three were improved, and 12 remained incurable.

Brief histories of 19 cases are given, showing the rapidly successful treatment of cases of advanced amblyopia, hemiopia, and recent traumatic amblyopia.

In peripheral paralysis of the ocular muscles, the anode is applied in front of the ear, and the cathode, which is small, and has a rounded end, covered with linen and moistened to the muscles, either directly to the eye itself or through the closed eyelid. In mydriasis the cathode is held to the centre of the cornea, so as not to irritate the dilator muscle of the pupil instead of the sphincter. At the same time, however, eserine is dropped into the eye.

In muscular asthenopia the electricity is either applied to each eye separately, or to both internal recti at the same time. In blepharospasmus the anode is carried round the eye, while the cathode is placed by turns over the branches of the fifth nerve surrounding the eye.—*London Medical Record*, Jan. 15, 1878.

MIDWIFERY AND GYNECOLOGY.

Dislocation of the Xiphoid Cartilage during Pregnancy.

M. POLAILLON relates in the *Union Médicale* (No. 24 for 1877) the case of a woman aged 35, a primipara, who, in order to hide her pregnancy, wore a narrow corset up to the seventh month, when she was one day seized with pain in the epigastrium, which was so violent that she was obliged to remove the corset. From this time, the patient perceived a small movable body at the painful part. The pain returned whenever the part was touched; also during eating and digestion. It returned during labour, which was completed with the aid of the forceps. Careful examination of the painful part showed that the xiphoid process was dislocated with its base inwards, the apex causing a projection of the skin. It was very movable; but movement caused severe pain. An attempt at replacement was unsuccessful. After a rather long stay in bed, the mobility and tenderness

had diminished. At the end of three months, the xiphoid process was almost fixed in its normal position; the part was no longer painful when touched, and the pain during digestion had disappeared.—*British Med. Journ.*, Dec. 8, 1877.

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Normal Labour during Extra-Uterine Pregnancy.

In the *Journal de Médecine*, Nov. 1877, M. LABUTUT reports the following case. A woman had had a previous normal labour, and two years later, had all the signs of pregnancy. At the end of five months, after progressive development of the abdomen, she had violent pains, but without result. After their cessation, she was sick for six months. Menstruation then reappeared, and the patient enjoyed tolerable health. The tumour subsided, the pains disappeared. Five years later, the catamenia were again suppressed. After several months, she was examined by a midwife of Toulon, Madame Rampin, who diagnosed pregnancy at the ninth month. She detected also a voluminous tumour in the right side, which, after hearing the patient's history, she attributed to an extra-uterine pregnancy. Fifteen days after this, the patient was naturally delivered of a living child. She lived two years, and died at Toulon Hospital, of pulmonary tuberculosis. At the necropsy, there was found in the right Fallopian tube a fetus at term, macerated, and enveloped in a thick pouch. The case was then one of tubal pregnancy, dating back five years. Notwithstanding this, there had been normal conception and delivery.—*Lond. Med. Record*, Feb. 15, 1878.

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Ano-Pelvic Version.

In the *Bulletin de l'Académie de Médecine*, Oct. 2, 1877, is an account of a new method of version to which M. GUÉNIOT resorts in cases of difficult trunk-presentation, complicated with uterine tetanus, where derotomy and evisceration of the fetus have been recognized as useless. The process of ano-pelvic version consists in using the weight of the patient's body to introduce the hand without fatigue towards the fundus uteri; in using the pubic arch, or the sacro-coccygeal hollow, as the *point d'appui* for turning the fetus with the aid of the finger curved like a crochets in the rectum; and, as regards the rest of the manœuvre, in following the ordinary rules of podalic version. The advantages M. Guéniot claims for this procedure are: 1. The pelvis is generally easier to find than the feet; 2. The hold afforded by the pubic arch or sacral hollow is firm and not likely to slip; 3. The traction being direct, the force is economized; 4. The evolution of the fetus can be effected whether the traction is towards the dorsal or the abdominal aspect of the fetus; 5. When podalic version has failed, the ano-pelvic process permits version to be accomplished.—*Lond. Med. Record*, Jan. 15, 1878.

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On the Treatment of Post-partum Hemorrhage by the Injection of Hot Water into the Uterus.

In an interesting paper on this subject, Dr. LOWBE ATTHILL, Master of the Rotunda Hospital, Dublin (*Dublin Journal of Medical Science*, Jan. 1878), says that, without doubt, the most efficient means at our command for the arrest of flooding after labour is the injection of a styptic, such as the solution of the perchloride of iron into the uterus. This is a procedure which, after repeated trials, he has no hesitation in recommending, and shall continue to have recourse to it in suitable cases. Apart, however, from the alleged danger of injecting a powerful styptic into the uterus—a danger which, though well-nigh groundless, suffices to deter many from having recourse to it—there is this objection to the practice, that the perchloride may not always be at hand when the emergency arises, and that valuable time may be lost ere it can be obtained.

The introduction of the hand into the uterus—in some cases an efficient method of checking *post-partum* hemorrhage—is certainly not free from danger, and is, moreover, by no means reliable in its results. While the routine treatment by cold, whether applied to the surface or injected into the uterus, requires for its success that the patient be possessed of sufficient vital energy to insure reaction. In other words, the application of cold in *post-partum* hemorrhage is a most efficient remedy in cases where a sudden loss of blood occurs in an otherwise healthy woman, who has not been exhausted by an unduly prolonged labour; but is altogether unreliable, and in many cases positively injurious, where the patient has been debilitated by previous disease, worn out by long protracted suffering, or exhausted by frequent, though it may be small, losses of blood.

As far as Dr. A.'s personal experience goes, those apparently alarming losses of blood which sometimes occur immediately after the birth of the child, or expulsion of the placenta, are not likely to terminate fatally; they can in general be at once arrested by steady pressure over the fundus of the uterus, and by the use of cold, but the hemorrhage to be dreaded is that in which the blood trickles away in a little never-ceasing stream, the uterus relaxing and contracting alternately. This form of hemorrhage, of which he has seen several fatal cases, is most liable to occur in debilitated women, and, in such cases, cold is in general absolutely useless—nay, more, often injurious.

Dr. Atthill's experience in two cases show that the injection of hot water powerfully stimulates the uterus to contract, and thus rapidly checks the hemorrhage, and evidently acts as a stimulant. The effect on the pulse was most marked, indeed the pulse was affected more rapidly than by the hypodermic injection of ether, and it did not flag again. The faces of the patients, too, lost the deadly hue they previously had worn—and last, not least, they expressed themselves as having experienced the greatest relief, and obtained great comfort.

Dr. Atthill believes that in hot water we have at once a safe and efficient remedy, one comforting and agreeable to the patient, and an agent which is always at hand. Whether it is as reliable as the perchloride of iron remains yet to be proved. As the advantage to be derived from its use is not limited to cases of *post-partum* hemorrhage, its range of usefulness is great.

In a subsequent communication to the *Lancet* (Feb. 9, 1878), Dr. Atthill states that this mode of treatment has been carried out in all suitable cases occurring in the hospital, and in the extern maternity, in connection with it, and gives the notes of these cases, sixteen in number.

In conclusion, he adds: 1st. That he does not, as a rule, employ hot water in cases of *post-partum* hemorrhage till the application of cold has failed to arrest it. 2d. That it is most markedly beneficial in the case of weakly, delicate women, and in those in whom, profuse hemorrhage having been checked, blood continues to be lost in small quantities, the uterus alternately relaxing and contracting. 3d. That, for its successful application, the tube of the syringe must be carried fairly into the uterus. 4th. That the temperature of the water must not be under 110° , and that it may safely be used at 115° .

In no single instance did any unpleasant symptom follow; and all the patients, with the exception of one, stated that they experienced feelings of the greatest comfort and relief from the treatment. In the case referred to, in which pain followed the injection of the hot water, it was uncertain whether the ovum had been expelled or not. Dr. Atthill had but once previously injected hot water in a case of abortion, but this woman was in a very critical state; she was cold and faint, and he stated to the class that if the ovum had not come away the hot water might stimulate the uterus to expel it, and that if the uterus were empty he believed it would arrest the draining which still continued. This case is, in his opinion, a very im-

portant one, and will lead him for the future to treat hemorrhage occurring in cases of abortion in a similar manner.

[Abstracts of interesting papers, by Dr. Windelband and Dr. Runge, on the use of hot-water injections in uterine hemorrhage, will be found in the numbers of the *American Journal of the Medical Sciences* for October, 1876, p. 589, and October, 1877, p. 588.]

Prophylaxis of Puerperal Fever.

The *Berliner Klinische Wöchenschrift* for January 7 contains an article by Dr. ZWEIFEL on the advantages of the antiseptic treatment as a preventive of puerperal fever. He mentions Bischoff as the first who adopted Lister's treatment in child-bed. Bischoff's plan is to give a bath at the commencement of labour-pains, and to wash out the vagina with a 2 per cent. solution of carbolic acid. This injection is repeated every two hours. The attendant's hands are disinfected in a 3 per cent. carbolic solution before each examination. In place of the time-honoured lard, a 10 per cent. carbolized oil is used. When it is necessary to pass the hand into the uterus, its cavity is also washed out with a 2 or 3 per cent. carbolic solution. After delivery, any little rent or wound is dressed with one-tenth carbolic solution. A pad of cotton-wool, dipped in 10 per cent. carbolized oil, is placed at the vulva. During the first thirteen days the lying-in woman, whether sick or not, has frequent vaginal and uterine injections of carbolic solution. This treatment has been successful in the hands of Bischoff; but, like that of Schüicking, which consists in a permanent uterine irrigation, it is too strict and minute. By the employment of a modified antiseptic treatment, Dr. Zweifel has confined 184 women at his lying-in hospital without a death. Several had febrile symptoms, which disappeared under the Lister treatment. Dr. Spiegelberg has only lost 5 mothers in 900 labours, by taking similar antiseptic precautions.

[It must not be forgotten that Professor Tarnier has obtained equally satisfactory results in his pavilion at the Paris Maternity by care and cleanliness alone, unaided by carbolic acid.]—*London Med. Record*, Feb. 15, 1878.

Digitalis in Metrorrhagia.

Amongst the medicines having the power of controlling congestive metrorrhagia, M. DESNOS (*Journal de Médecine et de Chirurgie Pratiques*) strongly recommends digitalis, which may be successful even where ergot has not yielded good results. The digitalis is given in the form of an infusion, in doses of from 50 to 60 centigrammes ($7\frac{1}{2}$ to 9 grains) in 150 grammes (about 5 ounces) of water. It acts in these cases by slackening the circulation. M. Desnos reports, amongst other cases, one of a young woman, in whom a metrorrhagia of several days' duration could not be arrested by a great variety of means successively employed. Digitalis administered in the manner indicated above almost immediately induced stoppage of the hemorrhage.—*Lond. Med. Record*, Jan. 15, 1878.

Report of a Fifth Series of Fifty Cases of Ovariectomy.

Dr. THOMAS KEITH, Surgeon for Ovarian Diseases to the Royal Infirmary, Edinburgh, has again recorded (*British Med. Journal*, Jan. 5, 1878) a diminishing mortality after ovariectomy. In the first series of fifty cases, there were 11 deaths; in the second, 8; in the third, 8; in the fourth, 6; in the fifth, 4. Of the four fatal cases, two died comatose, with suppression of urine, within thirty hours after operation; two died from blood-poison. One was a case of tumour of 53 lbs., complicated by a large fibroid uterus. Dr. K. unwisely removed a

pedicellated portion of the fibroid, which seemed to be much in the way. A drainage-tube was put in behind the tumour in the pelvis. The tube was displaced, probably as the patient was moved into bed. No serum escaped by it; and a fatal result happened in a case that promised to do well. Dr. Keith has no hesitation in saying that earlier operation would have saved the other three, for they were originally healthy women. One was a large sarcoma of slow growth. When seen, the patient had been little out of bed for sixteen months. The tumour was removed quite easily; but extensive adhesions to the mesentery and intestine led to the tying of nearly a hundred vessels. In the third, also complicated by a large uterine tumour, an inflammatory affection of the knee prevented the patient from coming to town when she was prepared to do so six months before. During this time she was tapped six times, seven gallons of fluid being removed on each occasion. The cyst-walls alone weighed upwards of 50 lbs.; adhesions were universal, and of the utmost firmness, especially to the liver. The fourth fatal case—one of double dermoid cyst—had been often urged by Dr. Mackenzie, of Larkhall, to have the tumour removed in a favourable time. An injury caused rupture of the cyst, and for nine months she was confined to bed. For long she was blood-poisoned, and had double phlegmasia dolens, the oedema extending even into the axilla; yet she rallied after many tapplings. The operation lasted three hours and a half. Masses of fat and hair had escaped into the upper part of the abdomen, and had become encysted by thick deposits of lymph in a most wonderful way. All this had to be dissected out. When she was placed in bed after operation, the temperature had fallen to 92 deg.

Not included in the table is that of a case in which ovariectomy was performed a second time. The patient recovered. In two cases of acute suppurating dermoid cysts—one seen with Dr. Keiller, the other in Lanarkshire with Dr. Lindsay and Dr. Lennox, of Hamilton—the pelvic adhesions were such that relief by ovariectomy could not be thought of; yet as both were in the last stage of the disease, it seemed right to try something. They were treated by incision and drainage, and both recovered perfectly. A third, similarly treated nearly two months ago, so far promises well in the hands of Dr. J. Cox, of Innerleithen. Two cases of cyst of the broad ligament are apparently cured by tapping.

In three cases Dr. K. was unable to complete the operation. One, aged 67, a patient of Dr. Lorraine, had been often tapped. On exposing the tumour, it was found to be malignant, with disease of the peritoneum. There was no ascites; the tumour was not disturbed. The second was sent by Dr. William Bell. Ascitic fluid surrounded a papillomatous growth. Early operation was advised, in the hope that no secondary affection of the peritoneum had yet taken place. The pelvis was filled with secondary growth, involving the base of the tumour, and he was unable to remove the pelvic portion. The third came from Dr. Borthwick, of Dumfries. A large thin-walled cyst was so adherent that, though part of it was separated, the pelvic portion could not be removed. The cyst was fixed in the wound and drained. These three cases ultimately proved fatal.

As in former reports, every case is now given in which Dr. K. has interfered with any abdominal tumour except by tapping. In the first hundred cases (*Lancet*, 1867 and 1870), deaths after incomplete operations were included amongst the deaths of the completed cases. A short history was also given of every case of ovarian tumour that was seen and not operated on, as well as the reason for not operating. A sort of balance-sheet was thus formed, by which the value of the operative results might be judged. In the second hundred cases, the London example was followed, and the deaths after completed and incomplete operations were separated; but details were given of every case of incomplete operation.

Now, the practice seems to be to ignore altogether incomplete operations, exploratory incisions, or errors of diagnosis.

Dr. K.'s confidence in the cautery in the treatment of the pedicle was some time ago shaken by hearing of a death from hemorrhage the day after operation in a case where it was employed. In four-fifths of the cases in this series the clamp was used, the cautery being reserved for very short pedicles. Of late, his faith in the cautery has returned, and he has used it in some ordinary operations. The last twenty-one operations were performed under the carbolic acid spray.

Sulphuric ether has now been given in two hundred operations. Properly administered, it is nearly a perfect anæsthetic. Dr. K. has pleasure in acknowledging the value of Mr. Ormsby's simple inhaler.

MEDICAL JURISPRUDENCE AND TOXICOLOGY.

Successful Treatment of Opium Poisoning by Atropia.

The practical application of our acquaintance with physiological antagonisms was well illustrated at the West London Hospital on the 14th inst. A woman living at a public house not far from the hospital took from twelve to seventeen grains of opium, as closely as could be ascertained, at eleven o'clock in the forenoon. On the patient being brought to the hospital at 11.30, an emetic was administered; vomiting followed; and the ordinary peripatetic treatment was then commenced. At 2 P. M. the respiration was failing, and the pulse was weak and small. At this time the case was seen by Dr. MILNER FOTHERGILL, who advised the subcutaneous injections of one grain of sulphate of atropia, to arrest the failure of respiration that seemed imminent. This was done at 2.15 P. M. For the next ten minutes the respiration fell till it became imperceptible. The patient was now put into a warm bed, as she was very cold from having been walked about. Ten minutes later the breathing began to return in shallow respirations, about five in the minute, with a long sigh at intervals. Improvement steadily continued till, at 4.30 P. M., the patient was breathing thirteen in the minute, the respirations being deep and long. At this time the temperature was only 97.5°, an indication of how low it had fallen. At 8.30 P. M. the respirations were 24, the temperature 100.4°, and the pulse 128, full, but compressible. The patient passed a slightly restless night; and at 10 A. M. of the 15th the respirations were 18, the pulse 100, and the temperature 99.8°. The pupils were slightly dilated. The patient was thirsty, but did not complain of much dryness of the throat. In the afternoon she was in all respects well and rational. No symptoms of belladonna-poisoning were exhibited, though the amount of atropine injected was large. The history of this case suggests that in similar but less successful cases the atropine has been given in too small quantities. So far as we know, this is the first time that a fatal dose, or what is commonly believed to be a fatal dose, of one poison has been given at once to check the lethal action of another poison. The result of the case ought to materially influence the future treatment of opium-poisoning.—*M-d. Times and Gaz.*, Feb. 23, 1878.

AMERICAN INTELLIGENCE.

ORIGINAL COMMUNICATIONS.

A Tasteless Antiperiodic. By SAMUEL ASHURST, M.D., of Philadelphia.

THE ever-growing demand for antiperiodics, with the consequent advance in the cost of quinia, is leading to a rigid scrutiny into the merits and efficiency of the other and cheaper alkaloids derived from Peruvian bark. It has been well known for years, and extended experiments have proved, that all the alkaloids thus derived, possess in greater or less degree the same properties, while the advanced chemical skill bestowed upon their manufacture has resulted in proving that the difference in power and efficiency between them is not so marked as was at one time supposed.

Cinchonia has been recognized by the profession, for a long time, as an efficient antiperiodic and tonic, but when prescribed it has very generally been in the form of a sulphate, its conversion into a salt having been thought imperative on account of the great insolubility of the neutral alkaloid. In the form of a sulphate it was used by the late Dr. William Pepper, and the results he obtained were recorded in this Journal so far back as 1853.

It is, however, this very insolubility of the base cinchonia, in the mouth, which has induced me to make use of it in the case of children, and of those persons who, while they think they cannot take a pill, at the same time dread the intense bitterness of a solution. It is a matter of easy proof that the insolubility of cinchonia, like that of many other substances, does not persist when subjected to the action of the acid gastric fluids, and that its solution is speedily accomplished in their presence.

There is, however, an inherent difficulty in administering the powder pure, and this is its tendency, like many other insoluble powders, to be retained in the mouth by adhering to the teeth. These remains of the dose, being gradually dissolved by the continued action of the salivary fluid, the bitterness, common to all the cinchona alkaloids, is fully developed. This difficulty can in great measure be overcome, by mixing the cinchonia with various substances, which, while they increase the bulk of the powder, fully compensate for this disadvantage by facilitating its complete passage through the mouth. Every physician will of course consult his own taste and pharmaceutical skill in the choice of a diluent. I have found sugar of milk to answer the purpose very well. As a further guard

against the solution of the cinchonia a small quantity of bicarbonate of sodium may be added with the object of neutralizing any free acid that may be present in the saliva. A powder containing one grain of cinchonia, four grains of sugar of milk, and one-tenth of a grain of bicarbonate of sodium, possesses only the slightly sweet taste of the sugar of milk, and is quite readily miscible with water or milk, or, if preferred, can be easily swallowed dry. With the object of promoting the solution of the cinchonia in the stomach, I at one time thought it well to administer an acid drink some little period after the ingestion of the remedy, but I am now convinced that this precaution is very rarely necessary, and that the gastric juice is quite able ordinarily to perform this task unaided.

My original intention was to have appended some abstracts of cases in the treatment of which I had made use of cinchonia, but upon second thought I have concluded that it is not worth while to occupy the space of the Journal, or the time of its readers, by adducing proofs of the efficiency of Peruvian bark. Suffice it to say that wherever the use of cinchona products is indicated, the alkaloid cinchonia will be found to fulfil these indications. As the base cinchonia, in powder, contains no water of crystallization, I am in the habit of prescribing the same dose of it as of sulphate of quinia.

To conclude: whenever, from any cause, it is desirable to administer an antiperiodic, or vegetable tonic in powder, I have no hesitation in saying that the neutral alkaloid cinchonia will be found *efficient* to a degree but little, if at all, less than quinia, that it can be so administered as to be *tasteless*, and that it is very *cheap*—less than one-sixth the cost of the salts of quinia.

These few lines have been written in the hope that others may be induced to give the remedy a fair and thorough trial, and that on account of its tastelessness they will find it to fill desirably a niche in their list of medicines.

Ligatures made from the Sinew of the Whale. By T. N. ISHIGURO, First Surgeon, Imperial Japanese Army. Communicated by SAMUEL D. GROSS, M.D., Professor of Surgery in Jefferson Medical College, Phila.

It is a universally acknowledged fact among us that since the introduction of the catgut ligature into surgical practice, we have derived much benefit from its use; but its costliness, and preparation with carbolic acid, have made it rather an article of inconvenience, especially for military purposes.

The new ligature I have recently invented is made of the tendon of the whale, beaten up into very fine fibres. The mode of manufacturing the ligature is very simple: it is generally made one metre long, and weighs about 1.8 decigramme, or 3 grains; and although it is as fine as an ordinary silk ligature, is capable of sustaining 1940 grammes, or about 4 lbs.

4 oz. When it is kept in the wound a week or ten days, it is found to be softened and nearly dissolved.

I have made quite a number of experiments by applying it in the ligation of arteries, and it has proved very satisfactory.

The ligature may be kept and applied just as that of the ordinary silk ligature.

The advantages which this new ligature possesses over the catgut are twofold, namely: 1st, its cheapness; 2d, its capability of application without being prepared in carbolic acid.

Being fully convinced that this ligature may prove a valuable article in surgical practice, I respectfully communicate the fact to the medical profession at large.

The ligature may be procured of Ichizayemon M. Iwashiya, Honcho Sanchomê, Tokio, Japan.

DOMESTIC SUMMARY.

Perityphlitis and its Treatment.

DR. SANDS, at a recent meeting of the New York Academy of Medicine (*Med. Record*, Jan. 19, 1878), stated that he had had somewhat unusual opportunities for the study of perityphlitis, and he gave the details of twenty cases of this disease which had come under his observation, nineteen of which had occurred in private practice. An analysis of these cases showed the following results: Resolution had occurred in 7 cases; recovered after operation, 8; recovered after rupture of abscess into bladder, 1; recovered after rupture of abscess into rectum, 1; died after abscess had been opened, 1; died after an unsuccessful attempt to reach the abscess, 1; died, without operation, of secondary meningitis, 1.

In reviewing his experience, Dr. Sands remarked that the chances of spontaneous recovery by resolution should never be lost sight of, but ought to be carefully estimated in every case before deciding the question of operation. He could recall several instances in which the symptoms, although characteristic, were mild throughout the entire course of the disease, and never indicated suppuration. Usually the fortunate result had followed the use of opium, leeches, and fomentations, which he regarded as the most valuable means of treatment. In these mild cases, resolution had generally occurred early, at the end of the first or the second week. Occasionally the symptoms, although acute at the onset, had quickly subsided under the treatment above mentioned. In rare instances the disease had run a chronic course without suppuration, one patient having had oft-repeated attacks during a period of five months, and finally recovering without the formation of abscess. In these chronic cases benefit seemed to have been derived from blisters and mercurial inunction. The liability to recurrence after resolution was an interesting fact. One of the patients, a young lady, he had seen in consultation with Dr. Draper, had a second attack a year after the first one, both unaccompanied with suppuration. Another had abscess two years after the first attack. A third had three attacks during a period of two years, the last one only terminating in suppuration.

In the case mentioned as having died of secondary meningitis, the abscess, although large, and dependent on perforation of the vermiform appendix, was found, *post-mortem*, in the lumbar region. It was only suspected during life, and did not reveal itself by the usual tumour in the iliac fossa. In the case in

which an unsuccessful attempt was made to reach the abscess, the latter was likewise situated behind the ascending colon, and was caused by a perforating ulcer of the posterior wall of the cæcum. General peritonitis and tympanites existed at the time when the exploratory incision was made, and rendered the examination of the iliac region difficult and unsatisfactory. If, in such cases, an exact diagnosis could be made, or even if the situation of the abscess could be reasonably conjectured, an incision in the lumbar region would be indicated as in the operation of colotomy.

Dr. Sands had found that, in cases terminating in abscess, the signs of suppuration became manifest between the first and second week of the disease. Fluctuation was generally absent during this period, and the formation of matter was indicated by the occurrence of chills or sweating, and especially by a continued elevation of temperature, the thermometer often marking from 101° to 103° . In doubtful cases, he had settled the question by the use of the aspirator. In regard to the proper time for opening the abscess, he thought that no rule could be laid down which would apply to all cases, and that the urgency of the symptoms, as well as the duration of the disease, should be taken into account. Unquestionably, delay was dangerous, and in the only case he had seen which proved fatal after the abscess had been opened, the latter had attained enormous dimensions, and was not incised until the tenth week. But, on the other hand, the operation might be performed too early, before the abscess was ripe, or before it had approached the surface so as to be accessible. He had once assisted a medical friend who operated, with his concurrence, on the ninth day, but no matter could be found, and eleven days elapsed after the operation before the abscess broke into the wound. Perhaps no harm had come from any of these early operations, and it might be urged that they were of service by dividing the resisting aponeurotic and muscular structures that would otherwise have opposed the progress of matter towards the exterior. Nevertheless, he felt inclined to wait a reasonable period, because then the matter would be more likely to be reached, and because time would thus be afforded for the consolidation and adhesion of the tissues overlying the abscess, without which the fetid contents of the latter would be apt to infiltrate the cellular planes, and occasion sloughing. This he had seen in one instance, and the complication rendered recovery tedious. Of the eight cases that were treated successfully by incision, Dr. Sands himself had operated in five, the remaining cases having been seen in consultation. Excepting the one already referred to, in which the operation was undertaken on the ninth day, they were all submitted to operation between the twelfth and the eighteenth day.

As to the method of operating, Dr. Sands preferred the plan originally practised by Dr. Parker to the modification afterwards proposed by Dr. Buck, although he had found that the external incision need not exceed two inches in length. This having been made parallel with Poupart's ligaments, and over the central part of the tumour, the abdominal wall should be cautiously divided to the level of the *fascia transversalis*, when, by the aid of a hypodermic syringe thrust in various directions, if necessary, the precise situation of the abscess could be determined. A deep incision, half an inch in length, then completed the operation. In one or two instances he had washed out the cavity of the abscess by means of a syringe; in the others it was deemed best simply to insert a tent or a drainage-tube.

Lastly, Dr. Sands stated that he believed there was little danger of wounding the peritoneum during the operation, and that he thought the relations of this membrane to the abscess were often misunderstood. It was commonly held that in perityphlitis due to perforation of the vermiform appendix, the matter was situated in the peritoneal cavity, and the abscess circumscribed partly by coils of

intestine, adherent to one another and to the adjacent abdominal wall. But he was certain that this was not the case, and that whenever perforation took place directly into the peritoneal sac, fatal peritonitis speedily ensued. When circumscribed abscess was about to form, he believed that perforation of the appendix was preceded by adhesion of the serous membrane investing the appendix to that lining the iliac fossa, obliterating at that point the peritoneal cavity. Perforation then occurring, the fecal matter or foreign body escaped into the loose connective tissue behind the caecum, and gave rise to suppuration, which, as it extended, usually stripped off and pushed aside the peritoneal membrane, which therefore would not be endangered by the usual incision made over the most prominent part of the inflammatory swelling. He was confirmed in this view of the pathology of the disease by the result of several autopsies he had either witnessed or heard of, and in all of which the abscess was found external to the peritoneum, being sometimes in the pelvic fascia, sometimes in the loose connective tissue of the iliac fossa, and occasionally in that behind the ascending colon. In no case had he seen a circumscribed perityphlitic abscess in the peritoneal sac.

On the Use of a Mixture of Bromide and Chloral in Epilepsy.

At a late meeting of the New York Therapeutical Society (*Med. Record*, March 2, 1878), Dr. E. C. SEGGIN made a preliminary report on this subject, of which the following is a brief summary:—

The formula employed by Dr. Seggin and two of his clinical assistants was as follows: R.—Potas. bromid. \mathfrak{ss} , chloral hydrate \mathfrak{ss} , aque \mathfrak{viij} .—M. Of that mixture from four to six teaspoonfuls were administered daily.

The observations were made by Dr. A. McLane Hamilton, of New York; Dr. J. C. Shaw, of Brooklyn; Dr. E. C. Seggin, and two of his clinical assistants, Drs. T. A. McBride and N. B. Emerson. The combination of chloral with bromide of potassium had been used in twenty-eight cases, and it was shown that the epileptic attacks were warded off by the new solution quite as well as by the bromides alone (bromide of ammonium in the same quantity being used instead of the chloral hydrate). The reflex irritability of the throat was reduced equally as well as by the use of the bromides alone.

In all the cases there was a remarkable immunity from the bad effects of the bromides, especially in the psychic sphere, and little or no acne had been produced. In no case was more than forty-five grains of each drug given daily, and really no bad results had been realized under the new treatment.

It had been hoped that the admixture of the chloral with the bromide would diminish the evil results produced by the bromide, such as general depression of the system, irritation of the skin, etc., and these advantages had been partially, if not fully, realized. The good results obtained had encouraged the committee to make a more extensive trial of the new mixture.

Extirpation of the Spleen.

Dr. G. B. SIMMONS reports (*Pacific Med. and Surg. Journ.*, Dec. 1877) the case of a man, aged 40, who consulted him on account of a greatly hypertrophied spleen. On June 6, Dr. Simmons extirpated the spleen; strong adhesions with the diaphragm were found to exist, and the removal of the organ was effected without the escape of any blood into the abdominal cavity. He gradually sank and died from hemorrhage two hours and a half after the completion of the operation. The excised spleen drained of blood weighed seven and a half pounds, and was fifteen and a half inches long.

[This is the third time that the operation has been performed in this country. Of the thirty-seven or thirty-eight cases of excision of the spleen which are now

recorded] nineteen or twenty, in which the excision was done for traumatic causes, all terminated favourably, while of eighteen pathological operations, at least twelve have proved fatal.]

Diagnosis of Sciatic Dislocation of the Hip.

DR. W. W. DAWSON, Professor of Surgery in the Medical College of Ohio, calls attention (*Hospital Gazette*, Jan. 1, 1878) to "a hitherto unrecognized symptom of sciatic dislocation of the head of the femur," which he describes as follows: If the patient be placed upon his back with the limbs extended there will be but very little shortening, but if the thighs be flexed upon the trunk at a right angle, then the knee of the dislocated limb will sink below that of the other side from one to two inches." The explanation given is that the sciatic notch is situated directly behind the acetabulum, so that in sciatic dislocation the limb when flexed at a right angle is shortened the distance from the centre of the cavity to the centre of the notch, which may be from one to two or more inches.

Dr. Dawson gives extracts from surgical writings from the time of Petit to the present day "to show that up to this time no author, so far as I have read, had called attention to the difference in the length of the disturbed limb when extended and when flexed at a right angle with the pelvis." He has, however, ignored an excellent paper on "Dislocations of the Hip—Sciatic variety," published *four years ago*, by Dr. Oscar H. Allis, Surgeon to the Presbyterian Hospital, Philadelphia (*Phila. Medical Times*, March 28, 1874), in which the same "hitherto unrecognized symptom," with its rationale, is fully and accurately described, and is illustrated in the same way by wood-cuts.

Poisoning by Custards and Ice Creams.

DR. J. S. WELLFORD, Professor of Materia Medica and Therapeutics in the Medical College of Virginia, in an interesting paper read at the late meeting of the Medical Society of Virginia (*Transactions Medical Society of Virginia*, 1877), concludes, from a careful investigation of recorded cases of poisoning by custards and ices, that the true cause is some decomposition in the albuminoid articles used, viz.: the milk and eggs, which may be aided perhaps by the sugar. The symptoms described as having been produced by cheese are so exactly like those in these cases, that we may fairly assign them to a similar cause; and he learns by a private letter from Dr. Kedzie, the able President of the Michigan State Board of Health, that he has analyzed several specimens of cheese which had caused similar symptoms without detecting any mineral poisons whatever. Nearly all these cases occurred in hot weather, and in most the article had been kept some time. Besides, when we reflect how liable milk is to become impregnated with medicinal and other substances by the food and ingesta of the animal furnishing it, Dr. Wellford thinks we may more justly attribute the symptoms to the milk than to the flavouring. I know it has been contended that, if the vanilla itself is not poisonous, it is frequently prepared with an oil which is or may become an irritant poison: but Dr. Wellford does not see why, if this is true, that we do not have these cases in winter as well as in the hot seasons of the year.

¹ Med. and Surg. History of War of Rebellion, Surgical Vol., part 2, p. 152, and Am. Jour. Med. Sci., Oct. 1876, p. 488, July, 1877, p. 261, Oct. 1877, p. 578, Jan. 1878, p. 272, and April, 1878, p. 556.

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